# MANUAL

BENGAL SECRETARIAT LIBRARY

OF THE

# MORE DEADLY FORMS OF CATTLE DISEASE IN INDIA.

REVISED EDITION.

1883.

ALLAHABAD:
NORTH-WESTERN PROVINCES AND OUDH GOVERNMENT PRESS.
1884.

# PREFACE TO FIRST EDITION.

This manual has been prepared, in obedience to the orders of His Excellency the Viceroy and Governor-General in Council, with the view of furnishing information as to the nature, causes, symptoms, treatment and means of prevention of each of the more deadly forms of cattle disease prevalent in India, and with the hope that cattle-owners will be induced to take better care of their stock, both in health and disease, and thereby save themselves much pecuniary loss.

The veterinary opinions noted are those of the highest veterinary authorities of the day.

The medicines noted in the formulæ, at the end of the manual, are all procurable in the local markets, and most of them, in every village, and are generally inexpensive.

CALCUTTA :
*November*, 1871.

J. H. B. H.

# PREFACE TO SECOND EDITION.

The demand for this manual has of late years been on the increase, and another edition, revised, is now issued.

It will be observed that the chapters have been re-arranged, and the disease "small-pox in sheep" has been considered.

BABUGARH,
N.-W. PROVINCES:
*April*, 1883.

J. H. B. H.

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BENGAL SECRETARIAT

# INTRODUCTION.

CATTLE, when duly cared for and fed, seldom become ill.

When they are too liberally fed, or more or less starved, they become unhealthy, and suffer from disease.

The diseases which are referred to in this manual are all preventible; that is, by common care and ordinary watchfulness on the part of their owners, cattle will not become affected with the diseases.

Some of the diseases are contracted by contagion, and others are solely attributable to mismanagement in the care and feeding of stock.

The causes of the several maladies have been fully explained; and as the causes can be prevented by common care on the part of cattle-owners, so it must be inferred that cattle-owners will have themselves only to blame if any of these diseases attack their stock.

A very important measure is generally sadly neglected, that is the storing of hay or straw for consumption during seasons of drought, inundation, or times when unfortunately cattle-plague may be prevailing. The consequence is, that cattle are obliged to be let loose to pick up what they can as food; and very often they eat herbage or shrubs of an acrid or poisonous nature; and in those districts, after subsidence of the inundation, they eat the pastures recently submerged, and in either case directly contract disease, or sometimes become diseased from contagion.

An owner of cattle ought always to have a sufficiency, or even more, of fodder in store for seasons of drought, inundation, or plague, and then his cattle, comfortably shedded, and duly fed at home, would escape becoming diseased.

Again, cattle require housing in certain seasons of the year, to have shade from the sun, or cover from heavy rain, or shelter during cold nights.

Cattle cannot remain healthy if exposed to heavy rains, or kept on lands covered with water, or have not shelter from the intense heat of a midday tropical sun, or the sharp cutting cold of damp and frosty nights. But Indian cattle are unfortunately very often thus treated; and it is indeed strange to find the Hindoo cattle-owner so careless of the sacred animal which he is enjoined by his religious laws to treat not only with kindness and love, but with respect and honor.

A cattle-shed should have a floor well raised from the surrounding grounds, be well drained, have a good roof to keep out the sun and rain, and walls to prevent the damp and cold winds of night blowing on the cattle. The windows should allow a sufficiency of light, the doors of easy ingress and egress, and the ventilation should be such as to allow of the admission of good air below, and the escape of foul air above. The shed and surrounding ground should be kept clean, and the urine and dung regularly removed.

Indian cattle are very often obliged to drink the most foul water because they cannot obtain pure water. Disease is doubtless very often engendered from such mismanagement.

It is not intended in this manual to enter fully into the subject of the feeding, watering, and general management of cattle in India, but, with reference to the causes of disease, to point out how evident it is that the neglect of cattle by their owners is, in nearly every case, the cause of disease appearing among them.

The food sufficient to keep a bullock or cow in good condition can be obtained at a trifling outlay—so trifling, that every man who makes real use and profit of a bullock or cow ought easily to afford; for the bullock by his work and the cow by her milk and progeny, will more than amply repay the cost of their keep; so, the owner who allows his stock to become impoverished in condition, and diseased, or become infected by plagues, will, by his own apathy, indolence, or wantonly cruel neglect, have only himself to blame for his so-called misfortune, and will remain answerable for cruelty to his stock.

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# CHAPTER I.

## THE CONTAGIOUS DISEASES OF CATTLE AND SHEEP *commonly met with in India, and the measures which, as a rule, should at once be adopted on the appearance of any contagious diseases among them.*

The most important contagious diseases are—

NAMES.—(1). Rinderpest;
(2). Black-quarter, gloss-anthrax, splenic apoplexy, and braxy (forms of anthrax fever);
(3). Foot and mouth disease;
(4). Pleuro-pneumonia.
(5). Small-pox in sheep.

**English names of contagious diseases.**

These diseases are met with in most parts of India. They are known by different names in different districts.

**Native names. Rinderpest is the most contagious.**

Below is a list of most of the names which they, in their various forms and stages, are known by in the several parts of India. Rinderpest is the most contagious, and is a very fatal disease; the loss per cent. of animals attacked ranging from 50 to 90; the duration of the disease being from 2 to 15 days.

**Black-quarter and other forms of anthrax fever.**

Black-quarter, gloss-anthrax, and splenic apoplexy in cattle, and braxy in sheep, are forms of anthrax fever, and, though not considered by veterinarians in England contagious in cold climates, are undoubtedly so in warm and tropical climates. They are the most fatal of contagious diseases; seldom an animal that is attacked recovers. Braxy in sheep is rarely met with in India. The duration of the different forms of anthrax fever in cattle is from 2 to 30 hours.

**Foot and mouth disease.**

Foot and mouth disease is very contagious, but seldom fatal. With careful treatment not more than one or two per cent. of the animals attacked die.

**Pleuro-pneumonia.**

Pleuro-pneumonia is very contagious, and unfortunately is not generally known to be so by native cattle-owners. It is insidious in its attack, and slow in its course, the animals becoming emaciated, but often living from one to three months, or even for a longer period.

Rinderpest, black-quarter, and the other forms of anthrax fever, and foot and mouth disease, are common in all parts of India.

**Pleuro-pneumonia occurs in some parts of India.**

Pleuro-pneumonia frequently occurs among the cattle of the North-West, Punjab, Sindh, and some parts of Bombay, and has been seldom heard of in other parts of India.

It should be remembered that these diseases are not only directly communicable from one animal to another of the same genus, but that the contagium may be carried by attendants going from diseased to healthy cattle, or may be carried with forage, or in water, which may have been within the reach of animals affected with the diseases.

Again, a stall, or ground occupied by an animal so diseased, becomes contaminated by the contagium, especially so in rinderpest, by the

discharges from the eyes, mouth, nostrils and bowels, and in foot and mouth disease, by the discharges from the feet and mouth.

Rinderpest affects all animals that chew the cud.

Rinderpest affects all animals, domestic and wild, which chew the cud, but the bovine species is the most liable to it. Sheep are sometimes affected, but in them the disease is generally of a mild type; still, it must not be forgotten that sheep have often been the carriers of the disease from diseased to healthy horned stock.

Rinderpest and pleuro-pneumonia are not communicable to man. Anthrax fever is sometimes communicable to man, so also is foot and mouth disease.

Rinderpest and pleuro-pneumonia are not communicable to man, but anthrax fever in some of its forms has been found to be communicable to man in the form of malignant pustule. Great care should therefore be exercised by persons, when examining the carcasses of cattle that have died from black-quarter, gloss-anthrax, and splenic apoplexy, to prevent their hands being scratched and inoculated.

Instances are recorded of man having been attacked with the vesicular eruption of the mouth, &c., from drinking the milk of cows affected with foot and mouth disease.

As these diseases, more especially rinderpest and foot and mouth disease, are always present more or less in every part of India, or, if not actually present, are liable to re-appear, precautions should be always taken to prevent the diseases, or, at least to prevent their spreading, if they do break out among stock.

Rules suggested

The following rules should be strictly attended to by persons in charge of cattle and sheep :—

Treatment of newly-purchased cattle.

I.—When cattle or sheep are purchased at a fair, they should be always treated as having been probably exposed in the fair to contagion, as cattle and sheep are brought to the fair from all directions, and in one direction or other, rinderpest or foot and mouth disease, or both diseases, very probably have lately been or are prevailing.

Treatment of cattle when removed to another locality.

II.—When cattle or sheep are being moved from one locality to another, they should not be allowed to mix with other cattle or sheep *en route*, and should never be kept at night in or near any *serai*, as a *serai* is often contaminated by being occupied, or having lately been occupied, by diseased cattle or sheep; they should travel in the cool time of the day, this should be particularly observed during the hot weather; and they ought not to travel more than ten or twelve miles during the twenty-four hours. They should be frequently watered and well fed.

Newly-purchased cattle to be kept apart from old stock.

III.—When cattle or sheep are purchased in a fair or elsewhere they should, on being brought to the purchaser's premises, be kept by themselves and not allowed to mix with the old cattle of the farm, at pasture or watering time, or at any time. They should be kept by themselves, for at least one to three months, in order to have proof afforded whether they are affected with a contagious disease or not (*Vide* Rules XX and XXI).

During that time the newly-purchased cattle should be carefully inspected morning and evening, and if any of the diseases above named appear among them, the affected animals should be at once isolated, and the remainder separated into small lots and picketed at some distance apart. At the end of three months, if no disease has appeared among them, they may be safely pastured and kept with the other cattle.

IV.—When cattle are travelling, or are moved from one district to another, they are liable to be exposed to contagion and contract disease; therefore on their arrival at home they should be carefully inspected, and if they have passed through an infected district, they should be kept by themselves for some time (*Vide* Rules XX and XXI).

**Cattle moved from one district to another are liable to contract disease.**

V.—When disease of a contagious nature, or supposed to be of a contagious nature, appears among cattle or sheep, the first important duty is to separate the sick from the healthy animals.

**When a contagious disease appears.**

VI.—Carefully inspect all the animals, and remove to the hospital any showing the slightest symptoms of disease.

**Removal of sick animals.**

VII.—Divide the healthy cattle into several lots, making each lot as small in number as space will permit. Picket the cattle in such lots a good distance apart, and to windward of the sick cattle. Frequently inspect each lot, and remove at once any animal in the least unwell. By steadily adopting this plan, the disease will be found in a few days to exist only among one or two lots, and by at once removing to the hospital any becoming sick, the disease will speedily be arrested in spreading through the herd. Each lot should be kept isolated from other cattle for three months (*vide* Rules XX and XXI) after being put by themselves, or after the last animal of the lot affected has been removed.

**Divide the healthy animals into lots.**

VIII.—The hospital, to contain the diseased cattle, should be enclosed by a strong fence and isolated. The attendants and the sick cattle must not be permitted to leave the isolated area. Food and water may be taken to the attendants and cattle, but no forage or water, or litter, or clothing, or anything should be taken from the hospital. Dogs should not be allowed to go to and from the hospital, as they may carry contagium to places where healthy stock may be.

**The hospital for the sick animals to be isolated.**

IX.—The dry litter, &c., of the hospital should be burnt inside the hospital area, and the moist dung and discharges, &c., should be frequently removed from the stalls, and buried in pits dug in the hospital premises. These pits should be six feet or more deep, and should be filled with the wet litter, dung, &c., of the hospital up to within two feet of the surrounding ground surface, and then quick-lime and good fresh earth should be used to fill up the remaining two feet.

**Burning of dry litter, &c.**

X.—The stalls, walls, &c., and ground of the hospital should be scrupulously cleaned by frequent sweepings and washings, and after every cleansing, McDougall's disinfecting powder or other disinfectants, or lime, or ashes, or even dry earth, should be plentifully scattered over the floors and ground, and the wood-work and walls should be first washed and then white-washed.

**Cleansing and disinfecting of stalls, wood-work, &c., of the hospital.**

XI.—The hospital should be well ventilated. Sulphur fumigation should be daily carried out for an hour or so in the hospital building; and at this time the doors and windows may be closed, and the ventilators only kept partly open.

**Ventilation and fumigation of hospital.**

XII.—The constant burning of sufficient litter, opposite the doors on the windward side of the building, is a good plan, at seasons when flies are numerous and are troublesome to cattle.

**Smoke of burning litter to drive away flies**

The sick animals to be kept clean and fed with laxative food.

XIII.—The sick cattle should be kept scrupulously clean, and have thin rice gruel, and fresh green grass as diet. The healthy cattle should also be kept on soft and laxative food, as cattle fed on hard dry food have the disease in a more severe form than those fed on laxative fodder.

Cattle that recover.

XIV.—When these contagious diseases have prevailed among cattle or sheep, they should not be allowed to pasture, or to be kept with unaffected herds, until three months (*Vide Rules XX. and XXI*) have expired after the last case of disease occurring among the affected lot.

Washing and disinfecting of convalescent animals.

XV.—Animals that recover should be well washed with warm water and soap, prior to being removed from the hospital, and, if obtainable, carbolic acid should be added to the warm water, in the proportion of one wine glassful of the acid to a gallon of warm water.

Burial of carcasses.

XVI.—Carcasses of stock that die of rinderpest, black-quarter, and other forms of anthrax fever, pleuro-pneumonia, and foot and mouth disease, should be buried and covered with at least four feet of earth.

Scoring and disinfecting of hides.

XVII.—The hides of cattle that die of these contagious diseases, should be either well scored, and slashed with a knife, and buried with the carcasses, or be properly disinfected in salt, lime, or other disinfectant.

Cleansing and disinfecting of stalls. *Vide* the Report of the Cattle Plague Commissioners.

XVIII.—The surface of earth floors of stalls, and ground on which cattle affected with contagious diseases have been kept, should be removed and buried, and the earth below should be well dug up and turned over and the floor re-made with fresh earth. Brick and stone floors may be scraped, washed, and disinfected with quick-lime or carbolic acid (*Vide* Report of the Indian Cattle Plague Commissioners, p. 810—811).

Disinfection of gear.

XIX.—Poles of carts and harness, or saddlery, &c., used by animals affected with contagious diseases, should be washed and disinfected. The old lining and stuffing of pack-saddles, &c., should be removed and burnt.

Periods of incubation of rinderpest, black-quarter, and foot and mouth disease.

XX.—The periods of incubation of rinderpest, black-quarter, and other forms of anthrax fever, and foot and mouth disease, are all believed to be within twenty-eight days; so, a month has been named as the time for an animal, supposed to have been exposed to the contagium of these diseases, to be kept isolated.

Period of incubation of pleuro-pneumonia.

XXI.—The period of incubation of pleuro-pneumonia varies from two to six weeks, but has been found, as a rule, to be from ten days to three or even more months, so when cattle have been exposed to the contagium of this disease, they should be kept isolated for at least three months.

Mange in cattle and scab in sheep.

*N. B.*—Mange in cattle and scab in sheep are both contagious, but are not of a fatal nature; still, when these diseases are found among stock, the affected animals should be separated from the healthy, and placed under medical treatment, to prevent the spread of the diseases and to cure the diseased animals, as mangey cattle and scabby sheep will neither thrive nor fatten.

*Native Names of Rinderpest.*

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Andar-ka matah ... | ... | Punjab. |
| Beadh ... ... | Chota Nagpore ... | Bengal. |
| Bedun ... ... | Agra ... ... | North-Western Provinces. |
| Bhao ... ... | ... | Madras. |
| Bhawanee ... ... | Benares ... ... | North-Western Provinces. |
| Bhool ... ... | ... | Bombay. |
| Bhulkandya ... ... | Nassick ... ... | Ditto. |
| Bossonto ... ... | ... | Lower Bengal. |
| Budda Azar ... ... | ... | Madras. |
| Buddabhao ... ... | ... | Ditto. |
| Burra Azar ... ... | ... | Ditto. |
| Burradook ... ... | Meerut ... ... | North-Western Provinces. |
| Burra Rog ... ... | Ditto ... ... | Ditto. |
| Burra Pera ... ... | Chittagong ... ... | Bengal. |
| Burree ... ... | Lahore ... ... | Punjab. |
| Chechuck ... ... | Patna ... ... | Bengal. |
| Chendia ... ... | Canara ... ... | Bombay. |
| Chendoorga ... ... | Ditto ... ... | Ditto. |
| Chera ... ... | Meerut ... ... | North-Western Provinces. |
| Chhye ... ... | Raipore ... ... | Central Provinces. |
| Chirhooah ... ... | Sultanpur ... ... | Oudh. |
| Chitka ... ... | Rohilkhand ... ... | North-Western Provinces. |
| Chitra ... ... | Sultanpur ... | Oudh. |
| Chooneah ... ... | ... | Thibet. |
| Daba ... ... | ... | Punjab. |
| Daknah ... ... | Patna ... ... | Lower Bengal. |
| Debee ... ... | Allahabad ... ... | North-Western Provinces. |
| Debee-ke-rooria ... | Unao ... ... | Oudh. |
| Devi ... ... | Colaba ... ... | Bombay. |
| Dhersi ... ... | Rajshahye ... ... | Lower Bengal. |
| Dodda Rogh ... ... | ... | Madras. |
| Dukkhina ... ... | ... | Lower Bengal. |
| Floko ... ... | ... | Bhootan. |
| Foshora ... ... | ... | Lower Bengal. |
| Gabouna ... ... | Lucknow ... ... | Oudh. |
| Gobussunto ... ... | Chota Nagpore ... | Lower Bengal. |
| Googlanee ... ... | ... | Ditto. |
| Gootee ... ... | ... | Ditto. |
| Gowthan Sitlah ... | Cawnpore ... ... | North-Western Provinces. |
| Havali ... ... | Nassick ... ... | Bombay. |
| Herri Berri ... ... | Dharwar ... ... | Ditto. |
| Hireybyani ... ... | Ditto ... ... | Ditto. |
| Hiza ... ... | Chota Nagpore ... | Bengal, Oudh. |
| Haolia ... ... | Nassick ... ... | Bombay. |
| Ishal ... ... | Partabgarh ... ... | Oudh. |
| Jahani ... ... | Assam ... ... | Bengal. |
| Joran ... ... | Chittagong ... ... | Ditto. |
| Jugudumba ... ... | Sonthal Parganahs ... | Ditto. |
| Kudinow ... ... | ... | Madras. |
| Lahosa ... ... | Sumbalpur ... ... | Central Provinces. |
| Mahamai ... ... | Meerut ... ... | North-Western Provinces. |
| Matah-ka-Niksar ... | Patna ... ... | Bengal. |
| Mah ... ... | Hissar ... ... | Punjab. |
| Mahamaee ... ... | Bhagalpur ... ... | Bengal. |
| Maindh ... ... | Meerut ... ... | North-Western Provinces. |

*Native Names of Rinderpest.*—(continued.)

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Mai ... ... | ... | Bombay. |
| Mahni byani ... ... | Belgaum ... ... | Ditto |
| Man ... ... | Kumaun ... ... | North-Western Provinces. |
| Manoon ... ... | Umritsar ... ... | Punjab |
| Marai ... ... | ... | Central Provinces. |
| Matah ... ... | ... | Lower Bengal. |
| Mogh ... ... | ... | Punjab. |
| Mokh ... ... | Ludhiana ... ... | Ditto. |
| Moharogh ... ... | Canara ... .. | Bombay. |
| Mookh Posunga ... | ... | Ditto. |
| Matharogh . . ... | ... | Ditto. |
| Moier ... ... | Assam ... ... | Bengal. |
| Moora and Moorai ... | Ditto ... ... | Ditto. |
| Moosolya ... ... | Colaba ... ... | Bombay. |
| Mour ... ... | Assam ... ... | Bengal. |
| Mowa .. ... | Ditto ... ... | Ditto. |
| Mowar ... ... | Ditto ... .. | Ditto. |
| Mowah ... ... | Hissar ... ... | Punjab. |
| Muhposega .. ... | ... | Bengal. |
| Murree ... ... | Goozranwalla ... | Punjab. |
| Nara ... ... | ... | Lower Bengal. |
| Nebinbyani ... ... | Belgaum ... ... | Bombay. |
| Newabee ... .. | Umballa ... ... | Punjab. |
| Nurudpeya ... ... | Rutnagherry ... ... | Bombay. |
| Panja Sota ... ... | Chota Nagpore ... | Bengal. |
| Paitchulna ... ... | ... | Oudh. |
| Patakna ... ... | ... | Central Provinces. |
| Pedda Moosa Rogum ... | ... | Madras. |
| Peer ... ... | Lahore ... ... | Punjab. |
| Perriah Novoo ... | ... | Madras. |
| Perangah ... ... | Assam ... ... | Bengal. |
| Peya ... ... | Rutnagherry ... ... | Bombay. |
| Phorya ... ... | ... | Ditto. |
| Pokna ... ... | Fyzabad ... ... | Oudh. |
| Poknal-ke-bemaree ... | Paharpore ... ... | Ditto. |
| Pokta ... ... | Sultanpur ... ... | Ditto. |
| Posunga ... ... | Patna ... ... | Bengal |
| Putkee ... ... | Satara ... ... | Bombay. |
| Puschima ... ... | ... | Lower Bengal. |
| Pytchinow ... ... | ... | Madras. |
| Raze ... ... | Kheeree ... ... | Oudh. |
| Roomdo ... ... | Surat ... ... | Bombay. |
| Saraku ... ... | ... | Madras. |
| Seelee ... ... | Surat ... ... | Bombay. |
| Seeor ... ... | Shikarpore, Sind ... | Ditto. |
| Seer ... ... | Meerut ... ... | North-Western Provinces. |
| Seelah ... ... | Cooch Behar, Patne ... | Bengal. |
| Serpan ... ... | Nassick ... ... | Bombay. |
| Simla ... ... | ... | Lower Bengal. |
| Sirruk ... ... | Hissar ... ... | Punjab. |
| Sitlah ... ... | ... | Lower Bengal. |
| Sitru ... ... | Shikarpur ... ... | Bombay. |
| Syal ... ... | Mooltan ... ... | Punjab. |
| Thakrooni ... ... | Orissa ... ... | Bengal. |
| Thukam ... ... | ... | Madras. |

*Native Names of Rinderpest.*—(continned).

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Unchalia ... ... | Surat ... ... | Bombay. |
| Ummay ... ... | ... | Madras. |
| Vaba ... ... | Mooltan ... ... | Punjab. |
| Vah ... ... | Lahore ... ... | Ditto. |
| Vair ... ... | Ditto ... ... | Ditto. |
| Vasuri ... ... | ... | Madras. |
| Vedun ... ... | Meerut ... ... | North-Western Provinces. |
| Vekkai ... ... | ... | Madras. |
| Wah ... ... | Oudh ... ... | Oudh. |
| Waryacha Rog ... | Sholapore ... ... | Bombay. |
| Yor ... ... | ... | Sikhim and Nepal. |
| Zahmut ... ... | Rawulpindee ... ... | Punjab. |

*Native Names of Foot and Mouth Disease.*

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Aishoo ... ... | ... | Lower Bengal. |
| Badla ... ... | Dacca ... ... | Ditto. |
| Bagher ... ... | Cooch Behar ... ... | Bengal. |
| Baikra ... ... | ... | Central Provinces. |
| Batan ... ... | ... | Lower Bengal. |
| Bayijarah ... ... | Ootacamund ... ... | Madras. |
| Bhowra ... ... | ... | Central Provinces. |
| Bikra ... ... | Kumaon ... ... | North-Western Provinces. |
| Badulkhoor ... ... | ... | Lower Bengal. |
| Buchka ... ... | Hissar ... ... | Punjab. |
| Chamatsia ... ... | Kishungunj ... ... | Lower Bengal. |
| Chapchapia ... ... | Bhaugulpore ... ... | Bengal. |
| Choamussia ... ... | Ditto ... ... | Ditto. |
| Chowa ... ... | ... | Ditto. |
| Chupchoopia ... ... | Cooch Behar ... ... | Ditto. |
| Chupka ... ... | Rohilkhand ... ... | North-Western Provinces. |
| Chupkah ... ... | Assam ... ... | Bengal. |
| Dukka ... ... | Kumaon ... ... | Ditto. |
| Goorkhoor ... ... | Oudh ... ... | Oudh. |
| Gorphoota ... ... | Narsingpur ... ... | Central Provinces. |
| Kalajarah ... ... | Ootacamund ... ... | Madras. |
| Kang ... ... | Gorakpoor ... ... | North-Western Provinces. |
| Khang ... ... | ... | Oudh. |
| Khoor ... ... | ... | Lower Bengal. |
| Khoorah ... ... | ... | Ditto. |
| Khorala ... ... | ... | Ditto. |
| Khoora Neema ... | ... | Ditto. |
| Khoratie ... ... | Cooch Behar ... ... | Bengal. |
| Khoorent ... ... | Ditto ... ... | Ditto. |

*Native Names of Foot and Mouth Disease*—(continued).

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Khooreefutta | Assam ... ... | Bengal. |
| Khoor Pukka ... | Ditto ... ... | Ditto. |
| Khoor Pucca ... | Etáwah ... ... | North-Western Provinces. |
| Koorug Moorug ... | ... | Punjab. |
| Khoorta ... ... | ... | Oudh. |
| Khoorwa ... ... | Ahmednugger ... | Bombay. |
| Khoorkhoot ... ... | Colaba ... ... | Ditto. |
| Khoorapira ... ... | ... | Lower Bengal. |
| Khoorye ... ... | Dinajpore ... ... | Ditto. |
| Khutcha ... ... | ... | Sikhim. |
| Khurphatta ... ... | Hamirpur ... ... | North-Western Provinces. |
| Khurchun ... ... | Surat ... ... | Bombay. |
| Khurmundmowaso ... | Ditto ... ... | Ditto. |
| Khurwalo ... ... | Punch Mehals ... | Ditto. |
| Khooseta ... ... | Kumaun ... ... | Lower Bengal. |
| Kunjala ... ... | Bhaugulpore ... ... | Oudh. |
| Kumkhoor ... ... | Oudh ... ... | Ditto. |
| Kungwa ... ... | ... | North-Western Provinces. |
| Kutcha ... ... | ... | Lower Bengal. |
| Lagaroga ... ... | Surat ... ... | Bombay. |
| Lagg ... ... | Colaba ... ... | Ditto. |
| Lall ... ... | Sholapore ... ... | Ditto. |
| Laroo ... ... | ... | Punjab. |
| Mohara ... ... | ... | Bombay. |
| Mukbur ... ... | ... | Punjab. |
| Moonkhee ... ... | Umballa ... ... | Ditto. |
| Moopaung ... ... | ... | Madras. |
| Mowassa ... ... | Ahmedabad ... ... | Bombay. |
| Pacca ... ... | Agra ... ... | North-Western Provinces. |
| Paira ... ... | Umritsar ... ... | Punjab. |
| Phatua ... ... | Orissa ... ... | Bengal. |
| Rorah ... ... | Meerut ... ... | Punjab. |
| Sedh ... ... | Ditto ... ... | Ditto. |
| Sobakar ... ... | Assam ... ... | Bengal. |
| Sobokerbineor ... | Ditto ... ... | Ditto. |
| Summaroo ... ... | Sehwan, Sind... ... | Bombay. |
| Thega ... ... | ... | Central Provinces. |
| Ukrao ... ... | Meerut ... ... | North-Western Provinces. |

*Native Names of Pleuro-pneumonia.*

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Hurriansh ... ... | Hissar ... ... | Punjab. |
| Papsha ... ... | ... | Bombay. |
| Phoopsa ... ... | Wardha ... ... | Central Provinces. |
| Pheepree ... ... | ... | Punjab, Sindh, Bombay. |
| Zalooljuan ... ... | ... | Bombay. |

*Native name of Black Quarter, Gloss Anthrax, Splenic Apoplexy, Braxy, and the various forms of Anthrax.*

| Names. | District and Province. | Presidency, &c. |
|---|---|---|
| Avroe ... ... | Punch Mehals ... | Bombay. |
| Chupparinovu ... | Yercand ... ... | Madras. |
| Gardooa ... ... | Uonao ... ... | Oudh. |
| Gardaha ... ... | Ditto ... ... | Ditto. |
| Gatherewan ... ... | ... | Ditto. |
| Goli ... ... | Hissar ... ... | Punjab. |
| Golghotona ... ... | Umballa ... ... | Ditto. |
| Ghuttoorooa ... ... | Kheri ... ... | Oudh. |
| Ghoorka ... ... | Rae Barelly ... ... | Ditto. |
| Ghoorooa ... ... | Agra ... ... | North-Western Provinces. |
| Ghootko ... ... | Hydrabad ... ... | Sindh. |
| Guttia ... ... | Lucknow ... ... | Oudh. |
| Ghuttiar ... ... | Shabunder ... ... | Bombay. |
| Gulatula ... ... | Tipperah ... ... | Bengal. |
| Golakantake ... ... | Bancoorah ... ... | Ditto |
| Gooldia ... ... | Hissar ... ... | Punjab. |
| Gooldun ... ... | Ditto ... ... | Ditto. |
| Gurera ... ... | Jhansi ... ... | North-Western Provinces. |
| Hubuk ... ... | Hissar ... ... | Punjab. |
| Odro ... ... | Surat ... ... | Bombay. |
| Palia ... ... | Agra ... ... | North-Western Provinces. |
| Sawmha ... ... | ... | Central Provinces. |
| Suth ... ... | ... | Punjab. |
| Thaloreenovoo ... | Yercand ... ... | Madras. |

*N. B.*—It is believed that the above nomenclature will be found generally correct, but it must be borne in mind that in some districts, diseases different in nature are called by the one name; also that some diseases have a name given to each of their various stages —

Malignant sore-throat (*Guttoorowan Golafulo, &c.*) is a form of Anthrax; and, as it is a contagious disease, animals affected with it must be treated accordingly.

# CHAPTER II.

## RINDERPEST.

Native names

NAMES.—*Bossonto* (Bengali), *Gootee*, *Cheechuck* (North-Western Provinces), *Matah*, *Pitchinow* (Bombay), *Peya* (Madras) &c.

This disease is known by many other names in India, *vide* Chapter I on contagious diseases.

Nature.

NATURE.—Rinderpest is a contagious fever of a typhoid type. It is the most contagious disease known. This depends upon the presence of a specific poison, which affects the system generally, but especially the fourth stomach and intestines. In these organs specific lesions are invariably found.

Period of incubation.

The period of incubation, or time that elapses before an animal shows symptoms of the disease, after being exposed to contagion, is generally short, being from two to three days; but sometimes it appears in as short a time as twenty-four hours, and a rare instance has been recorded of it not having appeared before the twenty-first day.

Symptoms.

SYMPTOMS.—The first symptom is increased temperature of the body, but this can only be tested by the use of a thermometer. The symptoms to be noticed by ordinary observers may be divided into three stages.

First stage.

*First stage.*—Dulness, shivering fit, coat staring, mouth hot, mucous lining of the mouth congested, short husky cough, ears drooping, bowels generally constipated, and the dung coated with mucus; appetite partially lost, thirst often great, spasmodic twitchings of the muscles of the body, especially of the back, shoulders or hind quarters, back arched, and the four legs drawn together, rumination slow and irregular, grinding of teeth, yawning, tenderness of the spine, pulse accelerated.

Second stage.

*Second stage.*—Mouth, ears, horns, legs, and other parts of the body vary in temperature, being at one time hot, at another cold; respiration is much quickened, appetite lost, rumination ceases, slight discharge from eyes, increased tenderness of spine, lies down, with head turned back to the flank, fever high, thirst great, difficulty in swallowing, twitchings of muscles more marked, pulse very quick, but irregular, difficulty in moving, gums and buccal membrane and papillæ very red, tongue furred, bowels very costive, the pellets of dung coated with mucus and blood, lining membrane of rectum and vagina very red and dry; tenesmus; and occasionally prolapsus of rectum and vagina.

Third stage.

*Third stage.*—Profuse discharge of very viscid mucus from eyes, nostrils, and mouth; very offensive breath, excoriations, coated more or less with yellow aphtha, of gums, corners of the mouth, buccal papillæ, and roof and floor of the mouth and tongue, also sometimes inside the nostrils and eyelids; incisor teeth loose. Purging now sets in, the dung at first consisting of small hard pellets, covered with blood and mucus, and watery fæces, and afterwards of fluid matter only with flakes of mucus, blood and aphtha, and is most offensive in odour; occasionally emphysematous swelling under the skin. Great prostration, continued thirst, but greater difficulty in swallowing, followed

by coughing, coldness of skin, horns, ears, legs and mouth. Cows in calf generally abort. The animal lies down, indeed has not power to rise, moans, breathes with difficulty, grunts ; liquid bloody fæces are involuntarily passed, the pulse is imperceptible and death generally occurs in two to six days. Sometimes an eruption of the skin is seen about the dewlap, udder, groins, shoulders and ribs ; but this eruption is not by any means an invariable symptom ; and when it occurs it is generally found in animals attacked in the hot season. This eruption is considered a favorable symptom, as, when it is profuse, dysenteric symptoms seldom prevail and recovery often follows ; when no eruption on the skin occurs, and violent dysenteric symptoms continue, death generally ensues. The disease is not improperly considered by some native cattle-owners a kind of small-pox, and is called *matah* by them when the eruption on the skin is evident, and is described as *andar-ka-matah*, when the lining membrane of the stomachs and bowels are so much affected as to lead to the passing of blood, mucus, and aphtha. In some cases, especially in those of rapid course, symptoms of delirium are shown by the animal becoming excited, and after plunging about, it will fall down, and become insensible and die.

Native opinion as to the disease: Matah. Andar-ka-matah.

The most characteristic symptoms are, viscid discharge from the eyes, nostrils and mouth with excoriation, aphthous ulceration of the gums and other parts of the inside of the mouth, and dysenteric fæces ; also eruption on the skin, when this symptom happens to be present. Still it must be borne in mind that all these symptoms are not invariably present, but some of them will be always found.

Characteristic symptoms.

The duration of the disease is from twenty-four hours to twelve or sixteen days, but generally three to nine days.

Duration.

TREATMENT.—Rinderpest belongs to a class of diseases which must run their course ; in other words, poisonous material contained in the system must gain exit, to allow of the patient recovering. In India, treatment is often successful, and this may be attributed to the disease being enzootic, and very often appearing in a mild form. In Great Britain, and in most countries of the continent of Europe, the treatment of the disease is seldom successful, and this depends upon the disease not being enzootic in those countries, and always appearing in a malignant form.

Treatment.

The most favorable course that the disease can run is that of eruption on the skin, and, as a rule, it may be noted that the more profuse the eruption, the better chance there will be of the animal recovering. The most unfavorable course is, when there is no eruption on the skin and dysenteric stools are frequently passed.

The grand aim should therefore be to aid nature in ridding the system of the poisonous material, and to support the strength of the animal by good care, nursing and proper diet.

The costiveness generally shown in the first stage may be relieved by small doses of saline aperients, such as common salt or epsom salt, from one and half to three ounces, once or twice a day, until the bowels become relaxed.

Injections of warm water and oil may also be given twice or thrice a day. Powerful purgatives will do harm by inducing prostration. A relaxed state of the bowels facilitates the elimination of the poisonous matter, but the treatment must be with the view of preventing the bowels continuing so relaxed as to endanger great prostration, which assuredly will follow the continued passing of watery and bloody stools.

When the purging and passing of blood and mucus continue for more than twenty-four hours, the astringent drench, *vide* recipe No. 24, may be given, or the following draught, which has been found to answer, by Mr. Thacker, V. S., in the Madras Presidency :—

| | | | | | |
|---|---|---|---|---|---|
| Camphor (koppoor) | ... | ... | 2 drs. | = | ¾ Tolah. |
| Nitre (shora) ... | ... | ... | 2 „ | = | ¾ „ |
| Dhutura seeds ... | ... | ... | 1 dr. | = | ½ Kancha. |
| Chiretta ... | ... | ... | 2 drs. | = | ¾ Tolah. |
| Arrack ... | ... | ... | 4 ounces | = | 2 Chittaks. |

This may be given in the first stage, and Mr. Thacker recommends that in the second stage when the diarrhœa has existed above twenty-four hours, the following, finely powdered, may be added to the preceding prescription :—"Gallnuts—2 drachms=¾ tolah." The astringent medicines should be repeated every twelve hours until the purging ceases.

Diet.

The diet should consist of rice and *kullye* gruel, well boiled and of good consistency.

Water may be given in the first stage as long as the bowels remain costive, but when the bowels become relaxed, little or no water should be allowed, and when purging has set in, the animal should not be allowed to drink any water, but only gruel, and of it, small quantities only at a time should be given. It often happens that an animal in the purging state becomes very thirsty, and will drink much water, but if water is allowed, it will cause more violent purging and lead to more prostration and quicken death.

When the purging is arrested, the medicine should be discontinued; the animal will require careful nursing, and the diet should be gruel, and a little fresh green grass or lucerne, or other young green food. Salt, in small quantities, may be given in the gruel or a lump of rock salt may be placed within the reach of the animal, so that he may lick it when he likes. Hard, dry, fibrous food should on no account be given to cattle recovering from rinderpest, as such food cannot be properly digested, and will cause indigestion, or other disorders of the stomach and intestines, or may cause a relapse.

Sheep and goats are liable to rinderpest.

Sheep and goats are liable to rinderpest, but they are not so liable to become affected when exposed to contagion as cattle are, still it must be borne in mind that they may be the carriers of the contagion from one herd of cattle to another, although they may not become attacked with the disease themselves.

Treatment of sheep and goats.

The treatment above recommended is applicable to sheep and goats affected with rinderpest, but the doses of medicine should be about one-sixth of those recommended for cattle.

Post-mortem appearances.

POST-MORTEM APPEARANCES—Will depend upon the duration of the disease, also on whether the disease assumes an acute type or not.

In acute and rapidly fatal cases the mucous membrane of the mouth, throat, and larynx will be found congested and swollen, and in the neighbourhood of the throat and lower part of the neck there will be much subcutaneous effusion of bloody water.

The mucous membrane of the nostrils and air passages, stomachs and bowels, will be found generally congested, especially so in the fourth stomach, where it will be of very dark red color, and mottled with violet and dark grey streaks and patches of submucous exudation.

In the cœcum, or blind intestine, will be often found similar appearances, and throughout the intestines dark patches of congestion, and the

surface of the mucous membrane covered with a viscid, red or bloody secretion, more of which will be found mixed with the contents of the bowels.

In cases less rapid in course, and where during life aphthous sores have existed in the mouth, the morbid appearances are more characteristic, and most of the following appearances will be found :—

*Mouth.*—Congestion, excoriations, and aphthous ulceration of the gums and other parts of the inside of the mouth and throat.

*First stomach.*—Slight congestion, and in some instances sub-cuticular extravasation of blood, and occasionally aphthous deposit on the cuticular coat.

*Second stomach.*—Slight congestion, and in rare instances aphthous deposit.

*Third stomach.*—Congestion in streaks and patches in the folds, and frequently aphthous dots, and sometimes aphthous perforation of the folds.

*Fourth stomach.*—Deep congestion of the mucous membrane of a dark red and livid color, with dark violet and grey stripes, and patches of ecchymosis, especially at the pylorus and on the folds, much aphthous deposit, and, in some cases, ulceration at the pylorus and on the folds.

*Small intestines.*—First bowel in a state very similar to that of the fourth stomach, in the remainder of these intestines patches of congestion, and very often aphthous deposit on Peyer's glands.

*Large intestines, cæcum,* and *colon.*—More or less mottled with violet or grey stripes and patches ; sometimes, aphthous deposit ; congestion in the rectum of a brighter red, and generally in longitudinal streaks. Liver very often congested; mucous membrane of gall-bladder occasionally more or less dotted with aphthous deposits.

*Trachea and larynx.*—Larynx and upper portion of the trachea congested and frequently aphthous. Lungs congested, sometimes more or less emphysematous.

*Heart.*— Lining and outer membrane sometimes congested, and with spots or patches of ecchymosis.

*Brain.*—Congestion of choroid plexus, serous effusion in the lateral sinuses.

The rules laid down in the chapter on prevention of contagious diseases, with reference to the isolation of animals affected with contagious diseases, are especially applicable to cattle and sheep suffering from rinderpest.

With the view of preventing the disease spreading by contagion, the rules noted in the chapter on contagious diseases, should be strictly observed. Prevention

# CHAPTER III.

## FOOT AND MOUTH DISEASE.

Names.

NAMES.—This disease is known by different names in different parts of India. The most common names are—*aishoo* in Lower Bengal, *khoor* and *khoorpucca* in the North-West, Punjab, and Bombay, and *moopaung* in Madras; the rest of the names will be found in Chapter I.

Nature.

NATURE.—It is a contagious fever, accompanied with vesicular eruption in the mouth and feet and on the udder. Sometimes the mouth only is affected, at other times the feet. In some cases the feet become first affected, in other cases the mouth.

It attacks cattle, sheep, goats, pigs and fowls; and even man has become affected from drinking the milk of cows affected with the disease.

It is constantly prevailing more or less in all parts of India.

An animal may suffer several times during its life from this disease.

Causes.

CAUSES.—In the majority of cases the disease is caused by contagion, but it may be spontaneous in its origin, and then is probably due to the animal having been kept on a stall or ground in a filthy state.

Very often it is difficult to trace the cause, but it is scarcely ever found where cattle are kept in a clean state and by themselves, that is, not allowed to mix with other cattle or frequent highways; so the cause would generally appear to be due to contagion.

Period of incubation.

Experience proves that the period of incubation is from twenty-four hours to three or four days, but generally thirty-six hours.

Symptoms.

SYMPTOMS.—The symptoms first noticed are a shivering fit followed by fever, hot mouth, horns and extremities, with smacking of lips and salivation. Then vesicular eruptions will be noticed in the mouth and feet and in cows on the udder and teats. The eruption is like blisters of the size of a bean. These vesicles or blisters are sometimes seen on the nasal membrane; they burst in eighteen or twenty-four hours, and leave red sore spots, which either soon heal or turn into ulcers.

The tongue is chiefly affected in the mouth, but the gums and roof of the mouth and the inside of the cheeks are in some cases affected.

The eruption in the feet will be found at the junction of the skin with the hoofs, and between the hoofs.

From the mouth being very sore, and the existing fever, the animal does not feed, and is very lame on the feet affected.

If the animal be a bullock and be kept at work, the symptoms will become more severe, the legs will swell, and very often the hoofs will be cast, and sometimes abscesses will form in the legs.

When the eruption is on the udder and teats, there will be swelling and tenderness of both.

If the milk of an affected cow be drawn by the calf, the latter will become affected.

In milk cows, the teats often become very sore from the blistered parts being pinched by the hands of the milkman, and the udder sometimes swells and becomes inflamed from the milk not being drawn away.

The hands, which milk diseased udders, will carry the contagium to the udders of sound cows, if care is not taken to well wash the hands after milking an affected cow.

In sheep, the symptoms are similar to those above described, but the feet generally suffer most; when sheep are affected they lose condition. Sheep.

When pigs are affected, they suffer much pain in their feet, and not unfrequently lose their hoofs; they often show pain by squealing.

The disease more frequently occurs spontaneously in pigs than in other animals.

This disease is sometimes mistaken for rinderpest, but in foot and mouth disease, as found in India, purging is not one of its symptoms, whereas diarrhœa and dysentery are invariable accompaniments of rinderpest. Again, in rinderpest the feet do not become affected. Characteristic symptoms contrasted with rinderpest.

It is possible for an animal to have at the same time both rinderpest and foot and mouth disease, but such a case is rarely met with.

If an affected animal is duly cared for, all symptoms of fever will disappear in three or four days, and the animal will be well in ten or fifteen days with little loss of condition; but if care is not bestowed upon the animal, and in the case of a bullock, if made to work, the fever will become severe, the appetite less, and from the ulceration extending between the hoofs and the feet, the hoofs may drop off, the legs will become much swollen, and abscesses will form in them, and death will occur in ten or twelve days. Duration.

In Europe, where the cattle are large and heavy, they suffer more from this disease than the lighter and smaller cattle of this country. In some attacks, the disease is mild; in others, of a severe type.

In Great Britain, the percentage of deaths among those attacked, has even reached in severe forms 50 per cent., whereas in India, the loss ought never to exceed 2 or 3 per cent., and with common care, an animal rarely dies from the disease.

TREATMENT.—The animal must be kept housed, shedded and clean, and the floor of the shed must be kept scrupulously clean, and the shed well ventilated. Treatment.

Wash out the mouth two or three times a day with tepid water, and afterwards with lotion—*vide* recipe No. 34.

Wash and foment the feet with warm water twice a day, carefully removing all dirt, especially from between the hoofs, and dress the sores with dressing—*vide* recipe No. 49.

The udder, teats, and other parts affected with sores, should be kept clean and dressed frequently with the same dressing, which will prevent the flies blowing the sores and breeding maggots. If the flies attack the teats or mouth, the camphorated oil may be used as a mouth-wash once or twice a day.

When there is much fever, give twice a day the drench—*vide* recipe No. 7 or 8.

The diet must be only soft green grass, such as doob or young lucerne; and an abundance of thin rice gruel (*vide* recipe No. 60), in which, once or twice a day, two or three ounces of treacle and one ounce of common salt may be mixed. Diet.

The treatment often adopted by natives, of keeping affected animals tied in water or mud as high as their fetlocks, is so far good in preventing the flies from blowing the sores, but, sometimes the sand or mud burrows into the cracks, between hair and hoof, and causes casting of the hoof.

PREVENTION.—As the disease, in the majority of cases, arises from contagion, the measures recommended in Chapter I on the prevention of contagious diseases should be most strictly carried out and enforced. Prevention.

# CHAPTER IV.

## PLEURO-PNEUMONIA.

NAMES.—Native name, *Pheepree* (Punjab and Sind) *Pupsha* and *Zalooljunb* (Bombay) &c.

Nature.

NATURE.—This is a disease of the lungs and the lining membrane of the chest. It is a contagious disease; is peculiar to cattle, affecting all breeds, and at all ages, on all soils, and in all climates. It often assumes an epizootic character; it is most insidious in its attack, sometimes rapid and sometimes protracted in its course, varying from one to four months, or even a longer period. It does not, as a rule, attack every head in a herd; indeed, it is capricious in the way it spreads.

Cause.

CAUSE.—The best proof of it being caused, as it is now generally believed to be, by contagion is, that in certain stocks in Great Britain, where the disease has not occurred, all the cattle of these herds have been home-bred and kept isolated from other cattle, that is to say, no stock is ever introduced, but all is home-bred.

Wherever pleuro-pneumonia is met with, the affected cattle have been so situated as to be exposed to contagion, and a careful inquiry will prove that such has been the case.

Period of incubation.

The period of incubation of this most insidious disease, is from ten days to three or even more months.

Symptoms.

SYMPTOMS.—The first symptoms noticeable by a professional man are, increased temperature of the body, and other signs by auscultation and percussion, but the symptoms to be recognised by cattle-owners will be only detailed.

The first symptom is that of the animal looking perhaps better than usual; indeed, having perhaps improved somewhat in condition; and this state will continue for a few days, when perhaps the attendant will notice the animal to have a shivering fit, and the pulse will be found to have increased—the mouth hot, muzzle dry; a cough, the cough being of a peculiar husky kind; loss of appetite; and if a milch cow, a less supply of milk.

In a day or two symptoms of fever set in, the coat stares, the mucous membranes are much injected, the mouth is very hot, and the breath is no longer sweet; the cough becomes worse and is painful, and there is increased difficulty of and rapidity in breathing: the pulse is very quick and full, numbering from 80 to 100; but after a time it becomes small and weak. The nose is poked out, in order to render breathing as easy as possible, but every expiration is attended with a grunt; the nostrils are very much dilated, and the breathing is rapid; when standing the animal turns out the elbows, and when lying down, lies on the centre of the chest bone, so as to cause expansion of the chest; or if only one side of the chest is affected, the animal will generally lie inclining to that side, so as to give every facility for breathing with the sound lung on the other side. Occasionally symptoms of hoven (*vide* Chapter IX) are seen; a slight discharge from the eyes and nose gener-

ally occurs; the extremities, horns, and skin become cold, and the breath very offensive. The cough then becomes more frequent, but is not given with any force; it has been well described as a "masked cough," in other words, a cough that the animal cannot give with force, and therefore it sounds as if purposely checked with the view of preventing much noise. The skin becomes very dry and hide-bound; the animal has gradually lost condition, but is now becoming emaciated.

Pressing the fingers between the ribs gives pain, and the animal grunts or moans. In the latter stage of the disease purging sets in. After the fever (which is invariably more or less present in all cases) subsides, the animal recovers appetite, and throughout the disease is found to eat fairly, or even well; but as the disease continues, so do the lungs become more and more closed, and heavy, the breathing more difficult, and the blood is no longer duly purified, so gradually emaciation follows, and ultimately the animal dies from suffocation.

In favorable cases, the disease affects only a portion of the lungs or only one lung, and the animal apparently recovers, but remains in poor condition.

In many cases, the disease so runs its course as to involve both lungs to an extent which leads to suffocation and death.

Duration.

DURATION.—The duration of the disease will depend upon the nature of the attack; if severe and rapid in its course, death will result in a week or ten days; if of mild and protracted type, death may not occur for two, three or even six months.

Treatment.

TREATMENT.—As a rule, very little benefit will be derived from the medical treatment of cattle attacked with pleuro-pneumonia; and in Europe and other countries where beef is eaten, it is found better to have the animals slaughtered directly they are attacked, and thus obtain as much money for them as possible, rather than run the risk of their losing flesh when under treatment and probably dying.

In India, the Hindus are forbidden by the laws of their religion to slaughter cattle, and in those districts where pleuro-pneumonia is met with, unfortunately the natives are not aware of its contagious character: hence the diseased animals are not kept apart from the other stock, and the disease spreads among the herd.

The fact of pleuro-pneumonia being sometimes capricious in its mode of spreading, that is, in some instances, not attacking those animals kept or tied nearest the affected animals, but those at a greater distance, and the period of incubation being longer than in other contagious diseases, and the disease being very insidious in its attack, induced cattle owners in Great Britain to have doubts, for a long time, as to whether the disease was contagious or not, but it is now universally acknowledged in Europe and Australia to be most contagious. In India, though it is often protracted in its course, it is generally fatal, as the disease is seldom noticed until it has firm hold of the system.

When an animal becomes affected, he must be carefully housed and nursed; the house should be well ventilated and kept perfectly clean, so as to ensure an abundant supply of pure air.

The diet must be of green grass and other soft and laxative food and rice conjee, and pure water *ad libitum*. Rank dry grasses or straw, should not be given.

During the stage of fever, when the pulse is very quick, the drench, (*vide* recipe No. 9) should be given.

If the bowels are constipated, the drench (*vide* recipe No. 5) can be given.

When all signs of fever have subsided, the powder (*vide* recipe No. 16) may be given in some rice gruel once or twice a day.

If there is much difficulty in breathing, the sides of the chest must be well fomented with very hot water, as described in recipe No. 55.

If the bowels are inclined to be constipated, then treacle, two or three ounces, and common salt, two ounces, should be given in linseed gruel [*vide* recipe No. 59) once or twice a day.

If the animal is very weak, two ounce doses of arrack in a seer of gruel may be given once or twice a day.

But it must be remembered that the disease will often prove to be incurable, and in a rare instance, when an animal does apparently recover, the constitution will be often found permanently weakened.

Whenever the disease attacks an animal, he should be at once isolated and kept apart from all other cattle, and the persons attending the sick beast should not attend the sound cattle. (*Vide* Chapter I.)

Inoculation.

Inoculation of sound cattle with the matter of the lungs of an animal that has died from pleuro-pneumonia was at one time believed to cause the animal inoculated to have a mild attack, and to gain immunity to a second attack; but the experience gained by professional authorities leads now to the belief, that inoculation so practised does not necessarily induce the disease, and certainly does not give immunity to after-attacks.

Post-mortem appearances.

POST-MORTEM APPEARANCES.—The lungs of a healthy ox are light, and do not weigh more than five or six pounds. When a bullock dies from pleuro-pneumonia, the lungs will be found heavy, and when cut into, liver-like or mottled, and containing here and there pus in cysts, and will weigh from 30 to 75 pounds; they will be also found more or less attached to the sides of the chest.

In some cases only one lung will be affected.

# CHAPTER V.

## ANTHRAX.

NAMES.—Black-quarter, congestive fever, gloss-anthrax, splenic apoplexy, &c. Names.

*Gcli* and *suth* (Punjabi), *golafula* (Bengali), *gutherewan*, (N.-W. Provinces), *Odro* (Bombay), and *Thaloreenovo* (Madras), &c.

NATURE.—This is a blood disease, and in India is contagious, though in cold climates it is believed not to be so, and is generally accompanied with a swelling under some part of the skin, generally on the loins, or hind or fore-quarters, or throat and sometimes tongue. The swelling is puffy and crackles when pressed upon by the hand. Nature.

The disease has been found communicable to other animals, and to man in the form of malignant pustule.

CAUSES.—When cattle, which have been for some time kept on very poor, bare or reedy pasture, are put on rich grazing grounds, they become very often affected : the younger cattle are specially liable to become affected, as in them blood is more rapidly formed than in older animals. The blood not only becomes suddenly enriched, but also vitiated, and escapes from its vessels in those soft parts of the body loosely connected. The most thriving animals are the most susceptible, especially those which are rapidly improving after having been in somewhat low condition. Again, at seasons when cattle are not sheltered at night, and the days are very hot and the nights cold, they are more liable to become affected. Causes.

In certain badly drained lands in Great Britain, the disease was wont to occur frequently, but since the lands have been duly drained, the disease is seldom or ever met with. In some parts of the continent of Europe, the disease is always more or less present at certain seasons, on lands where the drainage is defective.

Doubtless, in India, outbreaks of black-quarter frequently depend upon cattle pasturing on marshy lands.

When one head of a herd is attacked, it is almost certain that others will become affected, not merely from contagion, but also on account of having been probably fed and cared for, in a manner similar to the one ill.

SYMPTOMS.—The attack is generally very sudden. An animal, seen perfectly well a short time before, may be found in an hour or two afterwards to be dull and stiff, and to have a difficulty in moving, and in a few minutes a swelling will be observed under the skin in some part of the body, generally on the loins, hind-quarters, fore quarters or throat and tongue ; sometimes the disease may be located in the chest or abdomen, or even brain. Symptoms.

When the swelling under the skin is examined, it is found to crackle under the pressure of the fingers, and to feel as if blown out with air ; but this is owing to gas generated by the rapid decomposition of the blood. If the throat and lungs are principally involved, then the breathing will be distressed ; if the brain is affected, there will be symptoms of stupor, and when the spleen and other parts of the abdomen become gorged, signs of abdominal pain will be evident.

In a very short time, if a limb is affected, it is with difficulty dragged along, and the animal very soon becomes unable to move, and stands, as it were, rivetted to the spot. On account of the disease running its course so rapidly, the swelling rising so quickly, and the animal not being able to move, cattle-owners in the Punjab apply the name *goli* to the disease, because, they say, the affected animal seems to have been struck, as it were, by the hand of God with the bullet.

The respiration becomes very much increased, the animal moans, and the pulse is weak and rapid; the animal's strength soon fails, the external swellings rapidly increase, and death takes place in a few hours.

Duration. The duration of the disease is from 2 to 24 hours, generally from 2 to 9 hours.

Treatment. TREATMENT.—Treatment is of no avail, when the swellings are large, or when, from the distressed breathing, it is evident that the lungs are very much gorged with extravasated blood.

If the animal be seen before any swelling appears, the drench (*vide* recipe No. 4 or 3) should be at once given, and repeated every 8 or 10 hours until purging sets in. It is also a good plan to give every hour or second hour, two ounces of arrack and two drachms of camphor well mixed together in a *powah* (pint) of gruel.

Bleeding is recommended by some, but it is a very questionable remedy, and certainly can only be carried out in the very first stage of the disease, as the blood so soon becomes vitiated, turbid, tarry and black in color, that it will not run from the opened vein.

The animal should be kept under shelter, and allowed good pure water, in which common salt may be mixed.

When one of the herd is attacked, others will probably have a tendency to become affected; it is therefore advisable to give to each animal a laxative drench, in amount according to age (*vide* recipe No. 5), and in their water a small quantity of salt and nitre may be given.

All should be kept on bare pasture, and be made to frequently move about, so as to get exercise. It is also a good plan to insert a seton (*vide* recipe No. 66) in the dewlap of each animal. This has been found a most successful preventive measure, combined with the change to bare pasturage; the new pasturage being of an easily digestible kind.

Post-mortem appearances. POST-MORTEM APPEARANCES.—The carcasses of animals, which die of the various forms of this disease, will be found to have extensive extravasation of bloody water, and large clots of dark colored blood, in the parts of the body which have been chiefly affected.

The extravasation is mostly of a yellowish green color, and jelly-like in consistence, and mixed with clots of black blood, and the neighbouring flesh is often found black, and is easily torn from being more or less decomposed. The lungs are always more or less congested, and extravasation of jelly-like bloody water will be found about the heart and its bag. The cavity of the belly also frequently holds extravasation of jelly-like clots, and, even immediately after death, the smell from the carcass is offensive from the putrefied state of the blood. In a few hours after death, rapid decomposition will be found to have set in. Persons who examine the bodies of such animals, should be careful not to allow their hands or arms to be inoculated, or they may contract malignant pustule, a very severe and dangerous disease.

PREVENTION.—The prevention of the disease is a most easy matter compared with the treatment of an affected animal; and by carefully preventing stock becoming exposed to the causes above noted, seldom will the disease be found to make its appearance. Prevention.

Sheep are liable to the disease, and in Great Britain it is called braxy. Sheep.

The treatment of the disease in sheep is similar to that advised for cattle; but the doses of medicine should be of course less, and suitable prescriptions will be found in the chapter on recipes.

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# CHAPTER VI.

## MALIGNANT SORE-THROAT OR SWOLLEN THROAT.

Names.

NAMES.—*Golafula* (Bengal), *Guttoorewan* (North-Western Provinces), *Gooldun* or *Gooldia* (Punjab), *Avroe* (Bombay), *Chapparinovo* (Madras), and many of the names noted under the head of anthrax fever, because the symptoms are similar to those shown in that form of anthrax fever called gloss-anthrax, which is a form of the same disease.

Nature and cause.

NATURE AND CAUSE.—It is a very fatal and contagious disease, depending upon a blood poison, and consisting in rapid swelling of the tongue, the back part of the mouth, and the parts in the neighbourhood of the throat and upper portion of the windpipe, with effusion of bloody water in all the tissues around the tongue and throat, accompanied with much fever and difficulty in swallowing and breathing.

Period of incubation.

The period of incubation is probably the same as in the several forms of anthrax fever.

Symptoms.

SYMPTOMS.—Fever; swelling of the throat and glands below the ears, and between the jaws; salivation, with swelling of the tongue and back portion of the mouth; difficulty in swallowing and breathing; cough; the lining of the nostrils and eyelids is of a dark red color.

The swelling of all the parts described rapidly increases, and the animal breathes and swallows with greater difficulty; a rattling noise made in breathing can be heard many yards off.

The breath becomes very offensive, the tongue protrudes from the mouth, is dark in color, ulcerated, and here and there discharging matter, and purple patches can be seen on some parts of the tongue.

The difficulty in breathing increases rapidly, and in a very short time the animal dies from suffocation.

Duration.

The duration of the disease is from one or two hours to two or three days. About 80 per cent. of those attacked die.

Treatment.

TREATMENT.—The disease generally runs its course so rapidly that no time should be lost in adopting treatment. If seen at an early stage, and the animal has not much difficulty in swallowing, give a brisk purgative (*vide* recipe No. 3 or 5). Then treat the local affection of the throat, and, if possible, prevent the swelling so increasing as to cause the closure of the windpipe and suffocation. A red-hot iron should be applied in three or four scores, all round the throat, from the root of one ear to the root of the other, and for two or three inches along the upper portion of the windpipe; also, in two or three scores below and between the jaws, and then over the whole of the throat, from the root of one ear to the root of the other; a strong blister (*vide* recipe No. 52 or 51) should be well rubbed in. If the blister is found to act, it may be considered a very favorable sign. The mouth should be frequently washed with lotion (*vide* recipe No. 35).

Clysters (*vide* receipe No. 62) may be given every half hour.

Thin gruel, with a little salt in it, may be given the animal to drink, and in the gruel a stimulant (*vide* recipe No. 43).

Great care is necessary in administering medicine, so as to avoid choking the patient, as very often the animal has much difficulty in swallowing.

In some cases much relief is afforded by letting the animal inhale the fumes of burning sulphur, or tar (*vide* recipe No. 57).

When death from suffocation is threatened, the veterinary surgeon opens the windpipe, about the middle of the throat, so as to allow the animal to breathe through the opening, and, in some cases, this measure saves the life of the animal. Again, in cases when the swelling around the throat is very large, it may be opened with a sharp knife at the lower part in one or two places, and the wounds should afterwards be dressed with lotion (*vide* recipe No. 49).

Post-mortem appearances.

POST-MORTEM APPEARANCES.—The tongue, back of the mouth, and upper part of the windpipe are very much swollen, and of a dark-red color, and here and there ulcerated, and discharging matter; the outer covering of the tongue and the lining membrane of the mouth more or less detached; purple patches on the tongue, and back part of the mouth; all the parts very offensive in odour, having a putrid smell; general effusion of yellow and bloody water about the tongue, between the jaws, and around the throat; swelling of the glands from the root of the ears, along the sides of the throat, and between the jaws.

Lungs much congested, and not light, as in health, but more or less heavy.

Indeed, the appearances are very similar, if not exactly the same, as those seen in cases of gloss-anthrax.

As the blood is doubtless diseased, and the disease is of a contagious type, great care should be exercised on the part of those who administer medicines to affected animals, or open the carcasses of animals that die, to prevent their hands or arms becoming scratched or cut, and thus inoculated with the contagium of the disease.

The meat of animals that die of this disease, is considered by the natives in some parts of India poisonous, and the *chamars* will not eat it, though they are in the habit of eating the meat of animals that die from other diseases.

Prevention.

When the first case of the disease occurs among a herd of cattle, the same precautions and measures, recommended to be adopted when anthrax fever or other contagious diseases, break out, should be at once carried out (*vide* Chapters I and V).

# CHAPTER VII.

## SMALL-POX IN SHEEP.

Names.

NAMES.—Matah Chechuck (Bengal), Debee (North-Western Provinces), Burree (Punjab), &c.

Nature and cause.

NATURE AND CAUSE.—Small-pox in sheep is not an uncommon disease in India ; it is an eruptive fever analagous to the disease known as small-pox in the human subject.

Period of incubation.

PERIOD OF INCUBATION. —After exposure to contagion, the disease may appear in from 3 to 12 days, according to the temperature of the season.

Symptoms.

SYMPTOMS.—Dullness ; the animal separates from the rest of the flock ; little or no appetite or rumination ; stiffness in gait ; then shivering fits ; increased temperature of skin, found inside the arm pits, thighs and on lower part of belly, where the skin is thin and not much covered with wool. Bowels constipated ; discharge from eyes and nostrils ; red spots seen on the skin, especially inside arm pits, thighs, and over belly. Each red spot becomes enlarged and hard at the base, and at the top more flattened than pointed or dipped, and in the centre is a liquid between the outer and inner layers of the skin, and around is a red tinge.

These spots become ripe and burst; sometimes each one remains distinct, in other cases several run into each other, and a severe form of the disease follows. The eruption called pocks is found sometimes to break out internally in the air passages, or in the stomach and bowels, as generally occurs in Rinderpest in cattle. The pocks run a course of discharging first watery, then pustular matter, and afterwards drying up and the scabs fall off.

Duration.

The disease lasts about three or four weeks.

Mortality.

The mortality depends upon the attack. In mild forms it may not be more than nine or ten ; but in severe attacks the loss may be as high as ninety or more per cent.

Treatment.

TREATMENT.—Keep the sheep in dry and cool shelter, not exposed to rain or too much sun ; give daily one drachm of nitre, and if the bowels are constipated, recipe No. 38, and place rock salt within reach to be licked by the sheep. If much constipation, give injections as noted in recipe No. 62. Apply to the pocks, lotion of oil and sulphur, which will keep the flies off and allow of gradual healing. Do not attempt to apply drying up dressing until the sheep has got over the attack.

Diet.

DIET.—Let the sheep have a liberal supply of fresh pure water to drink, give a little soaked grain, or even linseed gruel (*vide* recipe No. 59), and green grass to afford nutriment, at the same time, to act as a laxative to the bowels.

PREVENTION.—When the disease is first found in a flock, those suffering should be at once separated from the rest and kept by themselves, and any more sheep found at all unwell, should be at once put with those already set apart. If the attack seems likely to prove of a severe form, it will be wiser to kill and bury all those affected, to prevent the disease spreading. Indeed with large flocks, it will be better to stamp out the disease by removing, killing, and burying any sheep in the least affected ; and thus prevent it spreading by contagion. Prevention.

The flock should be removed from the pasture lands and yards on which they have been, and neighbouring flock owners should be warned to keep their sheep away from the affected flock, and the lands and yards they have been using.

# CHAPTER VIII.

## CHOKING.

Nature. Difficulty in swallowing, or inability to swallow.

Cause. CAUSE.— This condition may be caused by hard and large pieces of food, such as sugarcane, *kirby*, &c., becoming lodged in the back part of the throat or in any part of the gullet—the canal by which the food passes from the mouth to the stomach.

Sometimes foreign bodies, such as pieces of leather, iron, nails, sharp thorns, sharp pieces of hard wood, &c., are taken by cattle and become lodged in the gullet, and when very hard, with sharp edges or points, may lacerate the lining membrane of the tube.

Symptoms. SYMPTOMS.—If the obstruction is in the back part of the mouth or throat, the animal coughs and salivates, and when drinking, the water will be returned by the nostrils.

If in the gullet, after making two or three swallows, and filling the gullet as far as the point of obstruction, the water will be returned by the mouth and nostrils.

The animal is very uneasy ; his countenance shows signs of pain ; spasmodic or cramp-like actions of the muscles of the neck will be observed ; these are owing to the animal endeavouring to make the lodged body go down in to the stomach, or to be returned by the mouth. In a little time, signs of hoven appear, and if the animal be not soon relieved, the left side of the belly will become much swollen.

If the obstruction is in the throat, by introducing the hand into the very back part of the mouth, it will be felt.

If it is in that part of the gullet, between the back part of the mouth and the chest, it will be felt on the outside by carefully examining the throat with the hand, as there will be a swelling at the point of obstruction.

If it is lodged in that part of the gullet, which passes through the chest, then the negative evidence of its not being found in the back part of the mouth, or any part of the throat, will be conclusive ; and when the animal drinks, water will be observed passing down the gullet along the lower part of the throat, without meeting with any impediment ; but after the animal has taken two or three swallows, the gullet, at the throat portion, will gradually become filled with the water, until at last when quite filled up to its junction with the throat, vomition of it will occur.

Treatment. TREATMENT.—Give very carefully and gradually warm linseed oil, half a pint, with arrack two ounces, well mixed together.

This will lubricate the gullet, and the impacted food, or foreign body ; and stimulate the gullet to act, and force it onward.

The medicine may be returned by vomition once or oftener, but it must be perseveringly given again and again, and only a little at a time.

If the cause of obstruction is lodged in the back part of the throat, it must be removed by the hand ; if in the throat portion of the gullet after giving the oil and arrack, press with the fingers all round the swelling observed in the throat, and it will very often be thus removed a little, then give a little more of the oil and arrack and again apply more pressure to the swelling, and by so persevering, the impacted body will generally pass onwards, and the animal will be relieved.

If, by the symptoms, it is evident that the part of the gullet within the chest is obstructed, and the steady perseverance in giving the oil and arrack has failed to remove it, then the hollow elastic tube (described in the chapter on hoven), if at hand, may be introduced by the mouth down the gullet to the part obstruced, and a little gentle pressure will generally move the cause of obstruction onwards to the stomach. If a proper tube is not to be obtained, then a good rattan cane, about the thickness of the forefinger, with a soft ball of cotton or tow, about the size of an egg, covered with cloth, and securely fastened around the one end of the cane, may, after being well soaked in oil, be introduced by the mouth into the gullet, and passed gently against the impacted body. During this operation the mouth must be kept open by an assistant.

It now and then happens that the gullet is cut or torn by the impacted body, or by the operator using too much force with the tube, or from the ball not being properly fastened on the end of the rattan cane, and thus the gullet may become permanently injured, and in such a case choking is very apt to re-occur.

Whenever choking happens, the part of the gullet obstructed will remain weak for some days, so only soft food, such as gruel or mashes, must be given for three or four days, and afterwards young green grass.

Opening the throat portion of the gullet with a knife, when the obstruction is in that part, is, in extreme cases, practised by veterinary surgeons.

# CHAPTER IX.

## HOVEN.

Names. NAMES.—The most common native names of this disease are *Pate Bageo*, *Simla*, and sometimes *Puschima*.

Nature. NATURE.—The disease consists in a distension of the first stomach or rumen with gas or wind.

Cause. CAUSE.—It is a common disease among cattle, and results from irregular feeding, such as eating of food to which the animal has been previously unaccustomed. After the first shower of the early rains, when succulent shoots spring up, cattle, which have been starved for weeks, are apt to overfeed themselves and become attacked with hoven. Several animals of a herd may thus be seized, and the affection may almost appear epizootic, or plague-like.

Hoven sometimes is seen as a symptom of choking —(*Vide* Chapter VIII).

Symptoms. SYMPTOMS.—The symptoms run their course rapidly; there is a swelling in the back portion of the left side of the belly, which, on being tapped with the fingers, is found to consist of a collection of wind in the first stomach. There is difficulty in breathing; the head is poked straight out, the animal grunts, stands quite stiffly, and appears unable to move.

The swelling of the belly rapidly increases, and the other symptoms become more urgent. Should the animal lie down, the difficulty in breathing is increased, and he will soon get up again. If the collection of wind in the stomach is not removed, the breathing every minute becomes more difficult, until at last with the belly greatly swollen, being no longer able to stand, he falls down and dies from suffocation.

Duration. This disease is very often mistaken for other diseases, and is sometimes thought to be the effect of poison, on account of the very rapid way in which it runs its course. In acute cases the duration of the disease may be from one to three hours; in more protracted cases, the animal may live from eight to twelve hours.

Treatment. TREATMENT.—Give as soon as possible the drench—*Vide* recipe No. 14. If the medicine has good effect, the animal will soon commence to belch, and the more the animal belches, the more will the swelling of the stomach and the difficulty in breathing pass away.

Should the medicine have no good effect, and suffocation be threatened, the mouth should be kept open by an assistant, and a hollow elastic tube, about six feet long, introduced into the mouth, and down the gullet into the stomach, to allow the escape of gas through the tube; but such a tube will not be in the hands of native cattle-owners, so the operation of opening the stomach must be at once performed in the following manner:—

At the upper portion of the left flank, between the last rib and point of the hip-bone, and at equal distances from the last rib and point of the

hip-bone, and the side bones of the loins, with a very sharp knife, such as a penknife, stab through the skin into the swollen stomach. The opening thus made should be large enough to admit of the introduction of a hollow piece of bamboo, about the size of the little finger and six inches long. Operation.

When this hollow bamboo is introduced into the stomach through the opening made by the knife, the wind will rapidly escape through the bamboo, and the animal will soon be relieved. The bamboo should be kept in for an hour or so, until all signs of swelling have disappeared.

To prevent the bamboo slipping into the belly, a piece of stick, about three inches in length, should be tied across the portion of the bamboo, about an inch from the end, remaining out of the belly.

A purgative dose of medicine (*Vide* recipe No. 3 or 5) should now be given.

DIET.—The animal must be fed with a little green grass, but on no account must food in large quantities be given. Diet.

When one animal of a herd is attacked, the rest of the animals should be prevented overeating themselves and thus becoming liable to the disease. Prevention.

# CHAPTER X.

## DISTENSION AND IMPACTION OF THE RUMEN OR FIRST STOMACH WITH FOOD.

Grainsick, or mow-bound.

Both cattle and sheep are liable to this disease.

Nature.

NATURE.—The large stomach is distended with food, either of a coarse, tough, and indigestible kind, such as overripe *wooloo* grass, or reeds; or sometimes an animal, when kept long fasting, is allowed access to a large quantity of very palatable food, and thus gorges the stomach; again, an animal may become attacked by eating too much grain at one time.

The disease is sometimes partly due to animals having an insufficiency of water.

Causes.

CAUSES.—When the stomach is overloaded, it becomes at first torpid in action, and from the continued pressure and distension of its muscular coats, it ceases to act on account of the latter becoming powerless, indeed paralysed.

Symptoms.

SYMPTOMS.—The symptoms may be mistaken for hoven, which is distension of the stomach by wind or gas; but the symptoms of this disease appear more gradually; at first the animal is dull, and does not ruminate; the left flank gradually swells, and when tapped with the fingers or pressed on, does not sound drum-like, or hollow, as in hoven; but is hard from being filled with food, and if pressed on, the fingers will pit as if pressing upon soft earth.

The bowels are inclined to be constipated.

In an hour or so, the symptoms become aggravated, the nose is poked out, so that the animal may breathe more easily, and the respiration is much increased, and is frequently accompanied with a grunt. If the animal lies down, it will be generally on the right side, but he will soon rise again, as in lying down he experiences more difficulty in breathing, so, as a rule, he remains standing; is much distressed in his breathing, grunting at each expiration, and grinding his teeth. At this period the distension becomes increased from the fermenting of the contents of the stomach; the pulse becomes very small and weak; respiration is performed with difficulty, and the animal soon falls down and dies from suffocation.

Duration.

The disease lasts from one to three days.

Treatment.

TREATMENT.—The treatment must be with the view of inducing the stomach to act upon the accumulated food. Give at once a strong dose of purgative medicine combined with a stimulant (*vide* recipe No. 6) in two or three seers of warm water.

Enemata of warm water and soap, made into soap suds, and oil, well mixed together (*vide* recipe No. 62) should be given every fifteen minutes. The belly, especially the left side, should be well hand-rubbed and then fomented as noted in recipe No. 55, especially over the distended stomach. Also a stimulant drench (*vide* receipe No. 41), with one or

two ounces of linseed oil, should be given every third or fourth hour. If the bowels are not opened in fifteen or twenty hours, another dose of purgative medicine, such as recipe No. 1 or 3, may be given. The enemata must be continued. If the animal becomes more dull, and shows signs of stupor, stimulants, such as receipe No. 41, must be freely given. The animal should be allowed as much tepid water, or very thin linseed gruel, as he will drink.

When purging sets in the symptoms will be relieved, but the diet for some days after must be only linseed gruel and bran mashes with one to two ounces of salt a day; and when all symptoms or fullness of the stomach have disappeared, then a little young sweet green grass may be given, but only in small quantities at a time, as the stomach, from having been so distended, remains, for a time, weak; and if the animal is too freely fed, the stomach will become again torpid in action, and probably overloaded.

When all medicines fail to act upon the stomach and bowels, the symptoms increase in severity; inflammation of the stomach follows, and this is recognised by pressure on the distended stomach giving the animal great pain. The breathing becomes much quickened, and the grunting louder, and the animal will soon die if the distended stomach is not relieved. In such a case the only plan of obtaining relief is to cut open, with a sharp pen-knife, the flank between the last rib and point of the hip bone; commencing to cut from above about two inches from the cross bones of the loins, and making an incision about six to eight inches long, through the walls of the belly, and then cutting through the walls of the stomach, and removing with the hand nearly all the food, and afterwards pouring into the stomach one or two seers of linseed gruel with a laxative dose of medicine such as recipes No. 2 or 5. The hole in the stomach is then sewn up, and afterwards the opening into the flank; and the external wound may be dressed with the ointment (*vide* recipe No. 33) or lotion (*vide* recipe No. 49). This operation, of course, requires a practised hand, and although it appears severe, animals, if operated on, when inflammation of the stomach has not too long set in, generally make a good recovery.

The disease is to be prevented by not allowing the causes (above recorded) to be in operation. Prevention

# CHAPTER XI.

## IMPACTION OF THE THIRD STOMACH OR FARDEL-BOUND.

**Nature.** This disease depends upon an impaction of the third stomach with hard, dry, and indigestible food, which accumulates, and becomes so very hard, dry, and caked between the folds or leaves of the stomach as to always arrest more or less its functions, and in severe cases to cause total obstruction.

**Causes.** CAUSES.—This disease occurs more frequently in the hot season, and is common in a season when there is an unusual scarcity of pasture and water. Cattle and sheep are then driven from sheer hunger to eat hard and fibrous grasses and reeds, or branches of shrubs and trees, and the third stomach is unable to triturate, that is, grind down, such hard and unwholesome fodder, and the latter gradually accumulates, hardens, and cakes within the stomach.

**Symptoms.** SYMPTOMS —The animal does not chew the cud, there is a loss of appetite, respiration is quickened, and is accompanied by a grunt, not unlike the grunt which is heard in pleuro-pneumonia. The bowels are constipated, sometimes at the commencement there is slight diarrhœa, but, as a rule, there is constipation ; now and then a small amount of liquid fœces, in which very hard and dark-coloured pieces of the caked fodder, detached from the leaves of the third stomach, are passed ; the urine is high coloured and not unfrequently there are signs of hoven.

If relief is not afforded, inflammation of the stomach sets in. In this case, the respiration becomes increased, and the grunting more audible. The animal grinds his teeth, and his countenance is pecuiarly expressive of pain ; the mouth, ears, and horns become cold, the pulse very small and thready, and numbers from eighty-five to hundred. Any dung passed is partly liquid and partly in small hard cakes, and very offensive. The grunt now becomes a moan. Sometimes in the last stage, the animal will be in a state of stupor ; in some cases, symptoms of great excitement occur, and these probably depend upon the fourth stomach or abomasum having become inflamed.

**Duration.** The duration of the disease is from five to fifteen days.

**Treatment.** TREATMENT.—The treatment must be with the view of releving the overloaded and impacted stomach of its hard, dry, and caked contents.

The drench (*vide* recipe No. 4 or 6) should be at once given.

Two or three ounces of arrack in half a seer of warm linseed gruel (*vide* recipe No. 59) may be given every five or six hours.

**Diet.** The diet should be only thin linseed or rice gruel, and a plentiful supply of this should be allowed, as it will assist much in opening the bowels, and in softening the caked food in the third stomach, and facilitating its escape. If no sign of purgation sets in in twenty-four hours, half the purgative drench may be repeated, and the doses of arrack and linseed gruel should be continued until the bowels are opened. Foment (*vide* recipe No. 55) well the belly.

It is most important to feed the animal with lots of thin gruel so as to allow every chance of the medicine acting upon the third stomach, and inducing it to perform its functions, and relieve itself of its dry, caked contents.

The gruel, taken in abundance, will materially soften the caked portions, and thus facilitate their removal from between the leaves of the stomach and their passage onward to the fourth stomach and bowels.

Very often many days elapse before all the hard and caked contents are got rid of, and it is therefore necessary to continue giving gruel. until no hard caked pieces are found in the dung.

When the animal shows signs of recovery, young green grass may be given in small quantities, and for many days only soft and laxative food should be allowed. If the animal be permitted to eat hard dry grass, or straw, he will most probably have a relapse.

POST-MORTEM APPEARANCES.—When the animal dies from fardel-bound the third stomach is found very hard and closely impacted with hard, dry, and caked fibrous food, so hard and dry as to very much resemble linseed cake or *kullee.* Post-mortem appearances.

When one animal of a herd is attacked, the rest of the animals should be supplied with grass of an easily digestible kind and plenty of water. Preventive measures.

# CHAPTER XII.

## RED WATER, BLACK WATER. OR BLOODY URINE.

Names

NAME.—*Lal presab* (Hind); *Rokto mootra* (Bengali).

Nature.

NATURE.—This is a blood disease resulting from imperfect digestion of the food and the consequent faulty preparation of the blood, &c., and the blood becomes in a thin and weak condition.

It is accompanied with much prostration and debility, and in severe cases, with emaciation. Both cattle and sheep are liable to the disease; more frequently cows and ewes are attacked, especially a short time after parturition, and probably this depends upon the drain on the system by the secretion of milk

Causes.

CAUSES —Some undrained lands are known to yield pasture which causes this disease. The pasture may be very rank, non-nutritious, or bare, and mixed with acrid herbage. It has been proved that when such lands are properly drained, manured, and cultivated, cattle pasturing on them cease to suffer from red water. The disease very often attacks the cattle of poor people, who cannot feed them properly. Foul water of boggy lands will produce the disease. It occurs more frequently at those seasons when the animals change their coats

Cattle fed on poor lands, especially when badly drained and not manured, are very subject to the disease; indeed it may be ascribed to unwholesome food and water, and particularly to food which, though bulky, contains a small amount of nutriment and consequently the blood becomes poor and thin in quality, and doubtless contains noxious matters, which nature attempts to remove by the urine.

Symptoms.

SYMPTOMS.—At first an animal shows signs of not thriving well, and, now and then, of being ill, by not feeding well and not regularly chewing the cud; and if a milch cow, giving less milk. The coat stares, and the skin is dry, unhealthy, and very often has a yellowish tinge; the back is arched; the animal is found alone, away from the rest of the stock; diarrhœa sets in; and may continue for two or three days, and then the bowels become costive.

The flanks are hollow, sometimes signs of hoven appear, or symptoms of abdominal pain may be present. The urine, up to this time, is found slightly altered, being perhaps only a little tinged; and as long as the diarrhœa continues, the urine remains but litte affected; but when constipation sets in, it at once becomes altered in color, being at first red, or of a claret color, and the animal evinces pain in voiding it. Constipation generally sets in about the fourth day, and then the urine is more frequently voided, and becomes very dark, and sometimes so dark as to cause the name of *black-water* to be given to the disease. The urine is also offensive in odour.

The animal becomes very weak; the lining membranes of the mouth and eyelids are pale in color; the eyes are sunk; the mouth, ears, and legs cold; the pulse very weak; respiration rapid: the animal lies

down much, loses condition rapidly, and soon becomes emaciated. Signs of abdominal pain are frequent; the animal at last becomes so weak as to be unable to rise, and gradually dies.

The duration of the disease varies from five or six to twenty-five days. Duration.

TREATMENT.—When the first symptoms appear, the bowels should be at once opened with a laxative drench to remove any indigestible food. The drench (*vide* recipe No 4) may be given; and after the medicine has operated, one of the stimulants or tonic medicines, such as recipes Nos. 12, 16, or 41 may be given; sometimes one dose of purgative medicine is not sufficient, and, in such a case, half the dose may be repeated in the course of twelve hours. Treatment.

The diet should be good linseed or rice gruel, and green grass of a soft and nutritious kind.

In the second stage, should diarrhœa set in and continue, so as to much weaken the animal, then the sedative drench, *vide* recipe No. 13, may be given, but astringents must be given at all times with great caution.

The animal must be supported with good gruel; and in the gruel, treacle, one quarter of a pound, and arrack two ounces, may be given twice or thrice a day Linseed oil one ounce or two ounces with one ounce of turpentine has been recommended, and this may be given in gruel twice a day; but, as a rule, medicines which irritate or excite the kidneys must on no account be given. Afterwards the mineral and vegetable tonics, such as recipes Nos. 10, 12, 16, should be given for some days.

POST-MORTEM APPEARANCES.—Great emaciation; flesh white, soft and flabby; the blood vessels more or less empty, as if the animal had been bled to death; red patches of congestion of the membranes covering the bowels and stomachs, and lining the heart; liver soft and congested; kidneys generally very light in color, but, as a rule, having no actual disease of their structure; general discoloration of all parts of the body, from effusion of bloody water of a yellowish tint; the fourth stomach and the small intestines will show patches of congestion, and will be covered with a layer of dark viscid mucus. The third stomach more or less impacted with hard dry food. Post-mortem appearances.

When one animal of a herd becomes affected, it will be advisable to change the pasturage and diet of all, to give to each animal a mild laxative drench (*vide* recipe No. 2 or 5), and in the evening, for some days, linseed or rice gruel, with a quarter of a pound of treacle, some salt, about an ounce daily, should be also given in the food; indeed a want of salt often predisposes cattle to the disease. Prevention.

Sometimes the disease is mild, and the animal recovers in a few days. If treated at the onset, the disease will generally be combatted successfully, provided the animal is duly supported with good gruel, sweet dúb grass, and other laxative and nutritious diet.

When pasture lands are found to produce *red water*, they should be well drained and manured; or if the owner cannot afford to do this, he had better plough it up and use it for other crops.

# CHAPTER XIII.

## DIARRHŒA.

Names. NAMES.—*Looseness of bowels: Scouring; Bhooknee (Panjábee); Petnabano* (Bengali).

Nature. NATURE.—This disease consists in frequent purging, generally, without fever, or constitutional disturbance; but, sometimes, with signs of abdominal irritation. The frequent and inordinate passing of watery fæces results from a disordered state of the stomach and bowels.

Causes. CAUSES.—It generally arises from the animal having taken some unwholesome forage, acrid herbage, or foul water.

Certain lands produce it, and it then depends upon the herbage grown on them, and very often such lands are marshy and badly drained. In the Panjáb, it is known by the name of *bhooknee*, and has of late years attacked the cattle of that province in seasons when pasturage and water were scarce, and the animals were obliged to eat unwholesome herbage and acrid shrubs and drink very foul water.

An overdose of purgative medicine may also cause diarrhœa. Again, in cases where the stomachs and bowels become overloaded, diarrhœa may follow.

In the last stages of pleuro-pneumonia and other blood diseases, a looseness of the bowels invariably appears. Cold or sudden chill has been known to produce it, specially when the bowels have been in an unhealthy condition.

Exposure to great heat is sometimes another cause.

Diarrhœa generally attacks herds when grazing on lands yielding the first shoots of green grass, after the first fall of the rains.

Symptoms. SYMPTOMS.—A frequent passing of watery dung with wind; at first with no straining, or pain.

The appetite generally remains good, the rumination may be a little irregular, and the secretion of milk may be less than usual; but the general health of the animal seems but little affected.

If the purging continue long, then there will be straining at the time of passing fœces, and the back will be arched; more or less pain will be shown, and sometimes blood will be passed with the dung.

This disease in the Panjáb is generally fatal because the original cause of the disease remains in operation.

Treatment. TREATMENT.—The treatment will depend very much upon the cause; but as a rule, in the first place, let the animal have a change of pasture or food and water, care being taken that both be good and sweet; then give the drench (*vide* recipe No. 24), and if any abdominal pain or straining be present, give two or three drachms of opium in the drench.

In severe cases, give only rice gruel or bran mashes as food.

After the medicine has operated, if the diarrhœa continues, then give the drench (*vide* receipe No. 27), which may be repeated if necessary.

Very important is it to feed the animal with sweet and sound food, and instead of water, to give, for some days, after purging has stopped, rice, linseed, and wheaten flour gruels well mixed together.

If the animal is weak and has lost much flesh, then give tonics (*vide* recipes Nos. 12, 16) once or twice a day.

In cases where the disease has assumed a chronic form, give the tonics (*vide* recipes No. 23 or 25).

When an animal affected is duly treated, cared for, shedded, and fed as above recommended, he will generally recover.

---

# CHAPTER XIV.

## DYSENTERY.

*Bloody flux.*

Names. NAMES.—*Amasha (Bengali).*

Nature. NATURE.—This disease is a specific inflammation of the lining membrane of the large intestines, sometimes accompanied with ulceration; is attended with passing of blood, slime, and pus with the dung which is more or less watery.

Causes. It may be a sequel of diarrhœa, or the effect of cattle eating unwholesome grasses or plants, or drinking foul water, or of exposure to severe cold and damp at nights, at seasons when the days are hot, especially when cattle are on marshy grounds.

Symptoms. If the attack is a result of diarrhœa, the symptoms noted under that head will have been observed. When occurring without any previous diarrhœa, the attack will generally come on suddenly; there may be a shivering fit followed by fever, and then the dung will be passed frequently, portions being in hard pellets, and the rest watery, mixed with blood and slime, the latter being like the curdled white of an egg.

Abdominal pain will be shown by colic symptoms; the animal will frequently try to dung, and in straining violently, the rectum will become everted.

In many cases the lining of the mouth, and eyelids, and the skin, will be found of a yellowish color, owing to the liver being involved in the disease.

Treatment. TREATMENT.—Apply hot water as described in recipe No. 55, so as to slightly scald the belly, or the belly may be lightly scored with the red hot iron. Give the drench (*vide* recipe No. 45); and if the straining is violent, pass a rope tightly round the loins, and give occasionally the sedative injection (*vide* recipe No. 64).

The bowels should be kept open for one or two days, but profuse purging should be prevented, and the drench (*vide* recipe No. 43) may be afterwards given.

Let the animal have only gruel, of half linseed and half rice, and boiled *kulye*, as diet. A little salt may be given in the gruel.

If dysentery continues, the drench (*vide* recipe No. 25) may be administered once or twice a day, and only rice gruel should be allowed until the dung becomes hard, then gruel made of half linseed and half rice may be given.

Only sweet and easily digested food should be given to an animal recovering from dysentery, or a relapse will probably follow.

Keep the animal in a clean, dry, well raised, and well ventilated shed, and during cold nights cover him with a blanket.

---

*N. B.*—Dysentery is met with in the latter stages of rinderpest, but in the former disease other characteristic symptoms, manifested in rinderpest, are not shown (*vide* Chapter II.)

# CHAPTER XV.

## ROT IN SHEEP.

*Fluke disease.*

NATURE.—This disease depends upon the presence of flukes or bladder worms in the liver. Nature.

It appears in sheep, when they are pastured on low lands and marshes.

When badly drained lands are duly drained, rot ceases to attack sheep pastured on them.

SYMPTOMS.—The disease is very insidious in its attack; a sheep gradually loses flesh, and a crackling under the skin can be felt when the hand is pressed upon the hips and quarters. At first the skin is unhealthy, and becomes very pale; the wool is loose and easily pulled off, and, after a little time the skin becomes discolored, and shows yellowish and dark patches. A swelling appears under the chins, and there is general œdema. The eyes lose their bright appearance, and the white of the eye is yellow; the back is somewhat sunk, and the belly becomes enlarged. The animal is very thirsty and generally feeds well, indeed eats greedily; very often coughs, and sometimes the cough is due to the presence of worms in the lungs, not flukes or bladder worms, but another kind of thread-like worm. Symptoms.

Purging sooner or later occurs, continues, and increases, and the animal becomes gradually weaker and more emaciated, and dies.

TREATMENT.—When this disease breaks out in a flock, the first thing to be done is to remove the sheep to higher and well drained lands, where no rank or marshy grass grows. An animal affected with the disease should be kept in a dry and sheltered place, and the drench (*vide* recipe No. 15) should be given once or twice a day. Treatment.

The food should be dry, sweet and nutritious, such as dry grass of high lands, grain, oil-cake, and rice gruel, with some salt.

If the carcass of a sheep that has died from this disease is examined, the following appearances will be found:—

POST-MORTEM APPEARANCES.—The muscles wasted; the skin of a yellowish tint; dropsy of the belly; liver diseased; and bladder worms, or flukes, in the bile ducts and sometimes in the fourth stomach and first bowel; blood vessels containing very little blood, and the blood is of a pale color and thin. Post-mortem appearances.

---

N. B.—The lands which are known to produce this disease should be well drained and manured with lime, ashes, and salt.

# CHAPTER XVI.

## BRONCHITIS.

Names.

NAMES.—*Hoose*, or *husk*, in young cattle and sheep ; *Kash* (Bengali).

Nature.

NATURE.—Is an inflammatory affection of the wind pipe, and its branches entering the lungs.

When sore-throat is neglected, bronchitis may supervene.

In hoose, in calves, the inflammation is due to the presence of smal thread-like worms in the wind-pipe and its branches.

Causes.

CAUSES.—When the disease attacks calves and sheep, it nearly always depends upon little thread-like worms, the ova of which have been taken with the food, or in other ways have gained entrance into the body and become worms.

When older cattle are affected with bronchitis, the disease generally arises from exposure to wet or cold, or chills, or any of the causes which lead to cold and sore-throat; sometimes it is an accompaniment of the latter.

Symptoms.

SYMPTOMS.—When old cattle are affected. the symptoms are very similar to those seen in sore-throat. The cough at first is very dry, and has a grating sound. The breathing is quickened, and there is a peculiar wheezing sound heard, and this may be very plainly heard by applying the ear to the lower part of the throat. After a time the cough becomes softer, owing to the effusion of mucus from the lining membrane of the wind-pipe and its branches, and is then accompanied with a rattling noise.

There will be more or less discharge from the nostrils and mouth, of mucus and phlegm, after the animal coughs.

When young cattle and sheep are affected with small thread-like worms, then the cough is very frequent and peculiarly husky. The animal has frequent fits of coughing, and the noise of the cough is that of a half wheeze and half cough. The animals place themselves in the position fore feet advanced, elbows turned out, with head and neck outstretched and slightly down, so as to facilitate the act of coughing, and thus endeavouring to cough up the irritating worms, which are lodged in thick mucus in the bronchial tubes. The animals gradually lose flesh and become emaciated. Death generally occurs in two or three weeks.

Treatment.

If one animal becomes affected, then many more of the same herd will generally be attacked.

TREATMENT.—When old cattle show signs of bronchitis, treatment should be at once adopted.

A good strong blister, such as recipe No. 51, should be well rubbed over the whole lower portion of the throat and lower sides of the neck, or a red hot iron may with advantage be applied ; and in severe cases the blister may be applied as well.

The drench (*vide* recipe No. 20) should be given, and care should be exercised in administering the medicine as explained in recipe No. 67.

The animal must be will sheltered and allowed good pure air to breathe, and therefore must not be kept in a confined and dirty shed.

Only rice, linseed or bran gruel, mixed with the powder No. 16, should be allowed once or twice a day; when the nights are cold the animal should be kept warm with a blanket, and be given a good dry bed.

The action of the blister may be kept up, should the symptoms not abate, by applying the liniment (*vide* recipe No. 50) over the blistered parts twice a day.

In some cases the lungs become diseased, and the symptoms noted in chapter IV will follow.

When young cattle and sheep are affected with small thread-like worms in the bronchial tubes, the drench (*vide* recipe No. 20 for a cattle and No. 22 for sheep), must be given, and a liberal supply of salt should be allowed with their food.

If many animals are affected, it will be a good plan to put them daily in a shed more or less shut up, and in the shed burn sulphur, as advised in recipe No. 56, so as to make them inhale the fumes.

After they have inhaled the sulphur fumes for half an hour, if they are found to be coughing much, fresh air must be let in to the shed, and the burning of sulphur must be discontinued for that day.

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# CHAPTER XVII.

## POISONING.

Cattle die from poisons either accidentally taken with their food, or criminally given to them.

**Nature of poison.**

The poison may be either vegetable or mineral.

In parts of India cattle are poisoned by chamars, so that they may obtain their hides. It is the custom generally throughout India to throw the carcass of cattle that die on the *bhagar*, and the hides are considered the perquisites of the chamars of the village. In some districts chamars pay a rent to the zamindar for the right of taking the hides.

Chamars sell most of the hides to hide merchants, and in many districts an agreement between the chamars and a hide merchant is drawn up and signed, whereby the hide merchant agrees to give so much money for a certain number of hides, provided they are supplied by the chamars in a given time; and it is customary for the hide merchant to give some money in advance to the chamars.

This often leads to the chamars poisoning cattle in order to obtain a sufficient number of hides by the time mentioned in the agrement; and they have often been detected, either in giving the poison by their own hands to cattle, or employing their wives and children to administer it.

**Modes of poisoning.**

The common mode adopted is to mix the dose of poison with a little ghi or flour, wrap it up in a plantain or other leaf, and put it into the mouth of the bullock, or throw it on the ground in front of the animal when feeding, for him to eat up.

Another plan is to scatter the poison over a sweet bit of pasturage.

The third plan is to introduce the poison with a sharp instrument through the skin into any part of the body, or into the fundament or vagina.

The poison commonly used is one of the preparations of arsenic, either white or yellow, generally the former; sometimes vegetable poisons such as *dhatura*, aconite, *madár* and nux-vomica are made use of.

It is believed that arsenic is sometimes provided by the hide merchants' agents, and given to the chamars.

Poisoning is probably often extensively carried on under the cloak of murrain, that is, when rinderpest is prevailing in a district more hides are secured by poisoning. Again the chamars are well aware of the contagious nature of rinderpest, and an instance has been recorded of their having taken the contents of the stomachs and bowels of cattle that had died of the disease, to a distant village, where murrain had not prevailed, to scatter over the pasture lands there, in order that the disease might be contracted by the cattle of the village; and they might have a new source of obtaining hides.

Cattle are sometimes poisoned by eating the castor-oil plant and seeds, and in seasons of drought, when pasturage is scarce, from eating acrid plants and herbage.

SYMPTOMS.—When poisons are eaten by, or given to a bullock or cow in large doses, the symptoms are: the animal becomes suddenly ill, then seized with a trembling fit, and attacked with most severe abdominal pain, striking the belly with the hind legs or horns, and looking frequently round to the flanks; foams at the mouth; has great thirst; very often shows tetanic twitchings; signs of hoven; passes dung very often; diarrhœa sets in, and with it more or less blood is passed, and generally, in from two to four hours, death occurs, the time depending in a great measure upon the amount and kind of poison administered. Symptoms.

TREATMENT.—The dose of poison generally given, is so large that treatment is seldom of use, and the antidotes are not at the hand of the cattle owners. Treatment.

When cattle owners have reason to believe that their cattle are being poisoned, some of the contents of the fourth stomach, and commencement of the small intestine, and a small portion of the stomach and intestine, say the part where the bowel and the stomach unite, should be carefully taken and secured in a large bottle, which should be afterwards filled with strong arrack, and well corked, and then sent for chemical analysis. Detection of poison.

The Magistrate or Civil Surgeon in the district will always readily aid in advising how the bottle may be forwarded to the Chemical Examiner.

In cases where the dose of poison may have been small, and the symptoms are not severe, the drench (*vide recipe* No. 2 or 3) should be at once given. A plentiful supply of linseed gruel may be allowed, but no water, until the pain and diarrhœa cease.

The diet should be bran mashes, with a little boiled *kullye*, and in the course of a day or two green grass may be given, but not grass of a coarse quality.

---

# CHAPTER XVIII.

## RECIPES.

Indian and English weights and measures graduated approximately.

The weights and measures noted in the *recipes* are according to the following tables:—

### WEIGHTS.

| | | | |
|---|---|---|---|
| 1 | Scruple ... ... ... | 2 | anna bit. |
| 1 | Drachm ... ... ... | 3 | (2 anna bits) = ¼ kancha. |
| 1½ | Drachms ... ... ... | ½ | tolah = ½ rupee. |
| 2 | Drachms—10 grs. ... ... | ¾ | tolah = ½ and ¼ of a rupee. |
| 3 | Drachms ... ... ... | 1 | tolah = 1 rupee. |
| 4 | Drachms = ½ ounce = ... ... | 1¼ | tolah = 1 rupee + 4 anna bit. |
| 8 | Drachms = 1 „ = ... ... | 2½ | tolah = 2 rupees + 8 anna bit. |
| 2 | Ounces = ... ... ... | 5 | tolah = 1 chittack |
| 1 | Pound = ... ... ... | 6 | chittacks or 1½ poah. |

### MEASURES.

| | | | |
|---|---|---|---|
| ½ | Ounce ... ... ... | ¼ | chittack = 1 kancha. |
| 1 | „ ... ... ... | ½ | „ = 2 „ |
| 2 | „ ... ... ... | 1 | „ |
| 1 | Pound ... ... ... | 6 | „ |
| 1 | Quart ... ... ... | ½ | a seer or 2 poahs. |
| 2 | Quarts ... ... ... | 1 | „ or 4 „ |
| 1 | Pint ... ... ... | ¼ | „ = 1 „ |

## RECIPES.

### PURGATIVES AND LAXATIVES.

#### 1.

| | | |
|---|---|---|
| Powdered croton seeds (gypal seeds) | ... | 1 scruple = 2 anna bit. |
| Common salt (lobon) | ... ... | ½ pound = 3 chittacks. |
| or | | |
| Epsom salt (salt) | ... ... | |

Mix.

An aperient.

Give in a quart (½ seer) of warm rice gruel in constipation.

#### 2.

| | | |
|---|---|---|
| Powdered sulphur (gondok) | ... ... | 2 ounces = 1 chittack. |
| Linseed oil (moshna tael) | ... ... | 4 „ = 2 „ |
| Warm rice gruel ... | ... ... | 1 quart = ½ seer. |

A laxative.

Useful to keep bowels relaxed after a purgative drench has ceased operating.

#### 3.

| | | |
|---|---|---|
| Linseed oil (moshna tael) | ... ... | 1 pint = 1 poah. |
| Powdered sulphur (gondok) | ... ... | 4 ounces = 2 chittacks. |
| „ Ginger (soont) | ... ... | ½ „ = 1¼ tolah. |

A purgative.

Give in a quart (½ seer) of warm rice gruel. For a sheep half of the quantity.

#### 4.

| | | |
|---|---|---|
| Common salt (lobon) | ... ... | 1 pound = 6 chittacks. |
| Aloes (moosobbor) | ... ... | 4 drachms = 1¼ tolah. |
| Powdered sulphur (gondok) | ... ... | 2 ounces = 5 „ |
| „ Ginger (soont) | ... ... | 1 „ = 2½ „ |
| Treacle (goor) ... | ... ... | 4 „ = 2 chittacks. |
| Warm water ... | ... ... | 2 quarts = 1 seer. |

A purgative.

For a sheep one-sixth of the quantity.

#### 5.

| | | |
|---|---|---|
| Epsom salt (salt) ... | ... ... | 4 ounces = 2 chittacks. |
| or | | |
| Common salt (lobon) ... | ... ... | |
| Powdered sulphur (gondok) | ... ... | 3 „ = 1½ „ |
| „ Ginger (soont) | ... ... | ½ „ = 1¼ tolah. |
| Treacle (goor) ... | ... ... | 3 „ = 1½ chittacks. |

A laxative.

All to be well mixed in 4 quarts (2 seers) of hot water, and given when cool.

## 6.

| | | | |
|---|---|---|---|
| Epsom salt (salt) or Common (salt lobon) ... ... ... | 1 pound | = 5 chittacks. | |
| Aloes (well mixed in boiling water) ... | ¼ ounce | ¼ | ,, |
| Linseed oil (moshna tael) ... ... | 4 ,, | 2 | ,, |
| Powdered ginger (soont) ... ... ... | ½ ,, | ¼ | ,, |
| Arrack (sorap) ... ... ... | 2 ,, | 1 | ,, |

A strong purgative.

To be well mixed up in 4 quarts (2 seers) of hot water, and given warm.

This dose is for a full grown and large animal. Half the quantity will be sufficient for a half grown bullock or cow, and one-sixth for a sheep.

### Febrifuges.

## 7.

| | | |
|---|---|---|
| Camphor (koppoor) ... ... | 2 drachms | = 6 (2 anna bits.) |
| Nitrate of potash (shora) ... ... | 3 ,, | = 1 tolah. |
| Arrak (sorap) ... ... ... | 1 ounce | = ½ chittack. |

Dissolve the camphor in the arrack, then add the nitre (shora) and give in a seer of cold water.

## 8.

| | | |
|---|---|---|
| Nitrate of potash (shora) ... ... | 4 drachms | = 1¼ tolah. |
| Common salt (lobon) ... ... | 1 ounce | = 2½ ,, |
| Powdered chiretta (chiretta) ... ... | 1 ,, | = 2½ ,, |
| Treacle (goor) ... ... ... | ¼ pound | = 1½ chittack. |

To be given in a quart (½ seer) of water.

## 9.

| | | |
|---|---|---|
| Camphor (koppoor) ... ... | 2 drachms | = ¾ tolah. |
| Nitrate of potash (shora) ... ... | 2 ,, | = ¾ ,, |
| Powdered dhatura seeds ... ... | 1 ,, | = 3/2 anna bits.) |
| Arrack (sorap) ... ... ... | 1 ounce | = ½ chittack. |

First mix the camphor and arrack together, then add the nitre and powdered dhatura seeds, and give in a quart or ½ seer of thin rice gurel.

### Cordials and Tonics.

## 10.

| | | |
|---|---|---|
| Common salt (lobon) ... ... | 6 ounces | = 3 chittacks. |
| Powdered ginger (soont) ... ... | 4 ,, | = 2 ,, |
| ,, Gentian (kurrou) ... ... | 2 ,, | = 1 ,, |

Half a chittack to be given at each feed to an ox with impaired appetite.

## 11.

| | | | |
|---|---|---|---|
| Black sulphuret of antimony (soorma or russunjon) ... ... ... | 2 ounces | = | 1 chittack. |
| Powdered anisi (pan mouri) ... ... | 4 „ | = | 2 „ |
| Common salt (lobon)... ... ... | 4 „ | = | 2 „ |

Mix.

One-fourth to be given as a dose in cases of deranged appetite.

---

## 12.

| | | | |
|---|---|---|---|
| Powdered ginger (soont) ... ... | ½ ounce | = | 1¼ tolah. |
| „ Chiretta (chiretta) ... ... | ½ „ | = | 1¼ „ |
| „ Black pepper (morich) ... | ½ „ | = | 1¼ „ |
| „ Ajwain (jowan) ... ... | ½ „ | = | 1¼ „ |
| Common salt (lobon) ... ... | 2 „ | = | 1 chittack. |

To be well powdered and mixed together, and given with one-fourth of treacle in warm gruel.

---

## 13.

| | | | |
|---|---|---|---|
| Powdered chalk (khorec) ... ... | 2 ounces | = | 1 chittack. |
| „ Catechu (khoair,) ... ... | 1 „ | = | ½ „ |
| „ Ginger (soont) ... ... | 4 drachms | = | 1¼ tolah. |
| Opium (aphim) ... ... ... | 1 „ | = | 3 (2 anna bits.) |
| Arrack (sorap) ... ... ... | 2 ounces | = | 1 chittack. |
| Water ... ... ... | 1½ poah. | | |

Mix well.

Dose for lambs, 1 to 2 chittacks morning and evening.
Dose for calves, double the quantity.

---

## 14.

| | | | |
|---|---|---|---|
| Arrack (sorap) ... ... ... | ½ pint | = | ½ poah. |
| Powdered ginger (soont) ... ... | 2 ounces | = | 1 chittack. |
| „ Black pepper (morich) ... | ½ ounce | = | 1¼ tolah. |

Mix.

Give in a quart (½ seer) of warm water. Half the dose will be sufficient for a young and half grown animal.

---

## 15.

| | | | |
|---|---|---|---|
| Common salt (lobon) ... ... | 1½ drachm | = | ½ tolah. |
| Powdered sulphate of iron (heerakos) ... | 1 scruple | = | (2 anna bits.) |

Mix.

Make into a powder to be daily given to a sheep affected with rot.

---

## 16.

| | | | |
|---|---|---|---|
| Powdered sulphate of iron (heerakos) ... | 1 drachm | = | 3(2 anna bits.) |
| „ Chiretta (chiretta) ... | ½ ounce | = | 1¼ tolah. |

Mix.

A good tonic.
Give in a quart (½ seer) of rice gruel.

## Refrigerant or Cooling Lotion.

### 17.

| | | |
|---|---|---|
| Hydrochlorate of ammonia (neeshadol) | | of each equal parts. |
| Nitrate of potash (shora) ... .. | | |

Dissolve in two seers of water, and apply to sprains and bruises.

## Vermifuge.

### 18.

| | | | |
|---|---|---|---|
| Assafœtida (hing) ... .. | ½ ounce | = 1½ | tolah. |
| Powdered sulphur (gondok) ... | 2 „ | = 1 | chittack. |

To be given in a quart (½ seer) of warm water every day, for five or six days.

### 19.

| | | | |
|---|---|---|---|
| Common salt (lobon) ... ... | 2 ounces | = 1 | chittack. |
| Powdered sulphate of iron (heerakos)... | 4 drachms | = 1½ | tolah. |
| „ Sulphur (gondok) .. | 1 ounce | = 2½ | „ |

To be given once or twice daily, for three or four days.

### 20.

| | | | |
|---|---|---|---|
| Turpentine (turpin tael) ... ... | 2 ounces | = 1 | chittack. |
| Linseed oil (moshna tael. ... ... | 6 „ | = 3 | „ |

To be thoroughly mixed and given in 2 quarts (1 seer) of warm gruel ; may be repeated every second or third day.

### 21.

| | | | |
|---|---|---|---|
| Common salt (lobon) ... ... | 1½ drachm | = ½ | tolah. |
| Powdered sulphate of iron (heerakos) ... | 1 scruple | = 2 | anna bits. |

Make into a powder, to be given daily to a sheep affected with rot

### 22.

| | | | |
|---|---|---|---|
| Linseed oil (moshna tael) ... ... | 2 ounces | = 1 | chittack. |
| Oil of turpentine (turpin tael) ... | ½ „ | = 1 | kancha. |

Mix.

Vermifuge for sheep.

## Astringents.

### 23.

| | |
|---|---|
| Powdered sulphate of copper (tountay), | 1 to 2 drachms = 3 to 6 (2 anna bits). |
| Water . ... ... ... | 1 quart = ½ seer. |

Dissolve.

In chornic diarrhœa for cattle.

## 24.

| | | | | |
|---|---|---|---|---|
| Powdered chalk (khoree) | ... | ... | 1½ ounce | = 3¾ tolahs. |
| Gum kino (polas gond) | ... | ... | 2 drachms | = ¾ „ |
| Opium (aphim) ... | ... | ... | 1 „ | = 3 (2 anna bits.) |
| Powdered chiretta (chiretta) | ... | ... | 4 „ | = 1¼ tolah. |

All to be well powdered and then add arrack (sorap) 2 ounces = 1 chittack, and give in 2 quarts (¼ seer) of rice gruel, as an astringent and antacid drench for cattle.

---

## 25.

| | | | | |
|---|---|---|---|---|
| Acetate of lead (suffeda) | ... | ... | 1 scruple | = 2 (anna bits.) |
| Powdered chalk (khoree) | ... | ... | 1 ounce | = 2½ tolahs. |
| Opium (aphim) ... | ... | ... | 2 drachms | = ¾ „ |

Give in thick gruel twice a day in dysentery in cattle.

---

## 26.

| | | | | |
|---|---|---|---|---|
| Powdered sulphate of copper (toontay) | ... | ... | 1 to 2 scruples | = ½ to ¼ tolah. |
| Water ... ... | ... | ... | 1 pint | = 1 poah. |

Mix.

For a sheep.

---

## 27.

| | | | | |
|---|---|---|---|---|
| Powdered chalk (khoree) | ... | ... | 2 ounces | = 1 chittack. |
| „ Catechu (khoair) | ... | ... | 1 „ | = 2½ tolahs. |
| „ Ginger (soont) | ... | ... | 4 drachms | = 1¼ „ |
| Opium (aphim) ... | ... | ... | 1 „ | = 3 (2 anna bits.) |
| Arrack (sorap) ... | ... | ... | 2 ounces | = 1 chittack. |
| Water ... ... | ... | ... | 1 pound | = 1½ poah. |

Mix thoroughly.

Dose { For lambs—1 to 2 chittacks morning and evening.
For calves double the quantity.

(Youatt)

---

## 28.

| | | | | |
|---|---|---|---|---|
| Powdered chalk (khoree) | ... | ... | 4 drachms | = 1¼ tolahs. |
| Opium (aphim) ... | ... | ... | 1 scruple | = 2 anna bit. |
| Powdered rhubarb or rhei (raoochenee) | | ... | 2 drachms | = ¾ tolah. |

Mix thoroughly.

To be given in milk or linseed gruel, to calves in dysentery. One-third dose to lambs.

---

## 29.

| | | | | |
|---|---|---|---|---|
| Powdered opium (aphim) | ... | ... | 2 grains | = 1 koonch. |
| „ Chalk (khoree) | ... | ... | 1 drachm | = 3 (2 anna bits. |
| „ Gentian (kurroo) | ... | ... | 1 „ | = 3 (2 „ „ ) |
| „ Ginger (soont) | ... | ... | 1 „ | = 3 (2 „ „ ) |

Mix.

Give in an infusion of linseed to sheep in diarrhœa.

## 30.

*External.*

| | | | | | |
|---|---|---|---|---|---|
| Powdered chalk (khoree) | ... | ... | 4 | ounces | = 2 chittacks. |
| „ Charcoal (koyla) | ... | ... | 1 | „ | = 2½ tolahs. |
| „ Alum (fotkeeree) | ... | ... | ½ | „ | = 1¼ „ |
| „ Sulphate of copper (toontay) | | ... | ½ | „ | = 1¼ „ |

Mix into a powder.

To be sprinkled on ulcers or epizootic aptha in cattle and sheep.

---

## 31.

*Blue stone ointment.*

| | | | | | |
|---|---|---|---|---|---|
| Powdered sulphate of copper (toontay) | ... | ... | 1 | drachm | = 3 (2 anna bits.) |
| Turpentine (turpin tael) | ... | ... | 1 | „ | = Ditto. |
| Linseed oil (moshna tael) | ... | ... | 4 | ounces | = 2 chittacks. |
| Wax (mome) | ... | ... | 4 | „ | = 2 „ |

Melt the oil and wax together, then add the turpentine and blue stone, and thoroughly mix by stirring until cold.

Good dressing for unhealthy sores.

---

## 32.

*Blue stone lotion.*

| | | | | | |
|---|---|---|---|---|---|
| Powdered sulphate of copper (toontay) | ... | | 1 | drachm | = 3 (2 anna bits.) |
| Hot water ... | ... | ... | 1 | pint | = 1 poah. |

Dissolve.

Apply when cold. Healing lotion.

---

## 33.

*Alum ointment.*

| | | | | | |
|---|---|---|---|---|---|
| Alum (fotkeeree) | ... | ... | 1 | ounce | = 2½ tolahs. |
| Linseed oil (moshna tael) | ... | ... | 3 | „ | = 1½ chittack. |
| Wax (mome) | ... | ... | 3 | „ | = 1½ „ |
| Turpentine (turpin tael) | ... | ... | ½ | „ | = ¼ „ |

Melt the oil and wax together over a fire, then add the turpentine and alum and thoroughly mix by stirring until cold.

---

## 34.

*Alum lotion No. 1.*

| | | | | | |
|---|---|---|---|---|---|
| Alum (fotkeeree) | ... | ... | 4 | drachms | = 1¼ tolah. |
| Water ... | ... | ... | 1 | quart | = ½ seer. |

Dissolve.

A healing lotion.

---

## 35.

*Alum lotion No. 2.*

| | | | | | |
|---|---|---|---|---|---|
| Alum (fotkeeree) | ... | ... | 2 | drachms | = 6 (2 anna bits.) |
| Treacle (goor) | ... | ... | 4 | ounces | = 2 chittacks. |
| Water ... | ... | ... | 1 | quart | = ½ seer. |

Dissolve.

## ALTERATIVES.

### 36.

| | | | | | |
|---|---|---|---|---|---|
| Aloes (moosobbor) ... | ... | 4 | drachms | = | 1¼ tolah. |
| Powdered sulphate of iron (heerakos) | ... | 2 | ,, | = | ¾ ,, |
| ,, Ginger (soont) ... | ... | 4 | ,, | = | 1¼ ,, |

All to be well powdered, then add treacle (goor) ¼ pound=1½ chittack, and thoroughly mix with a quart (½ seer) of hot thin rice gruel and give when warm. To be given every second or third day.

---

### 37.

| | | | | | |
|---|---|---|---|---|---|
| Powdered sulphur (gondok) ... | ... | 1 | ounce | = | 2½ tolah. |
| ,, Nitrate of potash (shora) | ... | 2 | drachms | = | ¾ ,, |
| ,, Ginger (sont) ... | ... | ½ | ounce | = | 2½ ,, |

Mix well.

To be given once or twice a day in thin gruel.

---

### 38.

| | | | | | |
|---|---|---|---|---|---|
| Common salt (lobon) ... | ... | 8 | drachms | = | 2½ tolahs. |
| Powdered sulphur (gondok) ... | ... | 8 | ,, | = | 2½ ,, |

Mix.

An alterative for cattle.

One-eighth of the quantity is a mild alterative for lambs and calves, to be given in their food or gruel.

---

## ANTISPASMODICS AND STIMULANTS.

### 39.

| | | | | | |
|---|---|---|---|---|---|
| Oil of turpentine (turpin tael) | ... | 3 | ounces | = | 1½ chittack. |
| Linseed oil (moshna tael) . | ... | 3 | ounces | = | 1½ ,, |
| Warm gruel ... ... | ... | 1 | pint | = | 1 poah. |

Mix.

Useful in hoven.

---

### 40.

| | | | | | |
|---|---|---|---|---|---|
| Hydrochlorate of ammonia (neeshadol)... | | 2 to 3 | drachms | = | ¾ to 1 tolah. |
| Water ... ... | ... | 1 | pint | = | 1 poah. |

For hoven.

---

### 41.

| | | | | | |
|---|---|---|---|---|---|
| Arrack (sorap) ... | ... | 4 to 6 | ounces | = | 2 to 3 chittacks. |
| Powdered ginger (soont) ... | ... | ½ | ,, | = | 1¼ tolah. |
| ,, Black pepper (morich) | ... | ½ | ,, | = | 1¼ ,, |
| Treacle (goor) ... | ... | ¼ | pound | = | 1½ chittack. |

All to be thoroughly mixed together, and given in a seer of warm water.

## 42.

| | | | |
|---|---|---|---|
| Powdered dry tobacco leaves (tamak) ... | ½ ounce | = | 1¼ tolah. |
| Treacle (goor) ... ... ... | 4 ,, | = | 2 chittacks. |
| Warm water ... ... ... | 1 pound | = | 1½ poah. |

Mix.

## 43.

| | | | |
|---|---|---|---|
| Powdered dhatura seeds ... ... | 1 drachm | = | 3 (2 anna bits.) |
| Camphor (koppoor) .. ... | 2 ,, | = | 6 (2 anna bits.) |
| Arrack (sorap) ... ... ... | 4 ounces | = | 2 chittacks. |

Dissolve the camphor in the arrack, then add dhatura and give in a seer of warm rice gruel.

## 44.

| | | | |
|---|---|---|---|
| Turpentine (turpin tael) ... ... | 2 to 3 drachms | = | ½ to 1 kancha. |
| Common oil (mustard oil) ... ... | 3 ounces | = | ½ poah. |

Mix well and give in warm rice gruel.

## 45.

| | | | |
|---|---|---|---|
| Linseed oil (moshna tael) ... ... | 1 pint | = | 1 poah. |
| Opium (aphim) ... ... ... | 3 drachms | = | 9 (2 anna bits.) |

Mix.

To be given in 2 quarts (1 seer) of rice gruel.

### Mange ointment.

## 46.

Oil of tar
Oil of turpentine } of each equal parts.
Oil of mustard

Powdered sulphur (gondok) quite sufficient to make into an ointment, apply with friction every second day, twice or thrice a day.

## 47.

| | | | |
|---|---|---|---|
| Oil of mustard ... ... ... | 2 quarts | = | 1 seer. |
| Cinnibar (hingool) ... ... | 1 drachm | = | ¼ tolah. |

Heat the oil over fire, then add the cinnibar (hingool) well powdered keep mixing together and apply warm.

### Dressings for wounds.

## 48.

For broken horn.

Spread tar on a piece of coarse cloth, then apply over the broken horn.

## 49.

*Camphorated oil.*

| | | | |
|---|---|---|---|
| Camphor (kopper) ... | ... | ... 1 | part. |
| Turpentine (turpin tael) | ... | ... ¼ | part. |
| Common oil (moshna tael) | ... | ... 4 | parts. |

To be well mixed together, and applied to sores. Should proud flesh form, apply powdered blue stone.

Is a good dressing for sores in the feet of cattle and sheep.

---

### Embrocation.

## 50.

Common oil (mustard oil) } of each equal parts.
Oil of tarpentine (turpin tale) }

Mix.

Apply with friction.

---

### Blisters.

## 51.

| | | | |
|---|---|---|---|
| *Mylabris cichorii* (telepoka) | ... | ... 1 | part. |
| Linseed oil (moshna tael), | ... | ... 6 | parts. |
| Wax (mome) ... | ... | ... 6 | parts. |

Melt the wax and mix with the linseed oil and then add the flies.

---

## 52.

| | | | | | |
|---|---|---|---|---|---|
| Croton oil (gypal tael) | ... | ... ¼ ounce | = | 1 | kancha. |
| Common oil ... | ... | ... 4 „ | = | ½ | poah. |

Thoroughly mix and apply.

---

## 53.

| | | | | | |
|---|---|---|---|---|---|
| Powdered mustard ... | ... | ... 2½ ounces | = | 1½ | chittack. |
| Oil of turpentine ... | ... | ... ½ „ | = | ¼ | „ |
| Warm common oil ... | ... | ... ¼ seer. | | | |

Well mix and apply.

---

## 54.

*For lice and ticks.*

| | | | | | |
|---|---|---|---|---|---|
| Common oil ... | ... | ... 1 seer. | | | |
| Powdered sulphur (gondok) | ... | ... 3 ounces | = | 1½ | chittack. |
| Oil of tar ... | ... | ... 1 ounce | = | ½ | „ |
| Turpentine (turpin tael) | ... | ... ½ „ | = | ¼ | „ |

Mix.

To be applied to those parts of the skin where lice and ticks are.

FOMENTATION.

## 55.

Apply from a quarter to half an hour very hot water with a flannel or *kombol* cloth, taking care that the part fomented is not chilled ; then thoroughly dry the part with dry cloths, afterwards rub in :

| | | | | |
|---|---|---|---|---|
| Mustard oil | ... | ... | ... | 4 parts. |
| Oil of turpentine | ... | ... | ... | 2 " |

Well mixed together.

---

FUMIGATION.

## 56.

*Shed*

*Sulphur.*

Burn sulphur (gondok) in an iron spoon over fire in the cow-house partially closed for half an hour, or until the gas causes the animals to cough.

---

FUMIGATION.

## 57.

*Single Animal.*

Burn sulphur or tar in an iron vessel over fire in front of the bullock or cow, so that the fumes may be inhaled by the animal.

In fumigating, care is necessary so that the animal may be able to inhale air as well as the smoke of the sulphur or tar.

The inhaling of the fumes of sulphur and tar alone, without being mixed with a sufficiency of air, would kill an animal.

---

POULTICES.

## 58.

Bran to be so mixed in hot water as to form a soft paste ; place on a cloth ; pour a little common oil over the upper surface, and apply.

Should the wound be very unhealthy, sprinkle powdered charcoal over the poultice before applying it to the wound, and change the poultice and charcoal frequently.

---

## 59.

GRUELS.

*Linseed Gruel.*

| | | | | |
|---|---|---|---|---|
| Linseed (moshna) | ... | ... | ... | 1 pound = 1½ poah. |
| Water | ... | ... | ... | 8 quarts = 4 seers. |

Boil gently, keeping it constantly stirred for an hour.

Strain the gruel through a cloth, and give with a little salt, when cool.

## 60.

*Rice Gruel.*

| | | | | | |
|---|---|---|---|---|---|
| Rice (chawal) | ... | ... | ... | 2 pound = 3 | poahs. |
| Water | ... | ... | ... | 10 quarts = 5 | seers. |

Boil for an hour and a half and afterwards strain through a cloth, and give with a little salt when cool.

---

## 61.

CLYSTERS.

*How to make a clyster pipe and give infections.*

Take a piece of hollow bamboo about a foot long, having a diameter of about half an inch, and round off the ends of the bamboo so that they may have a rounded, and not a sharp edge. Make a long leather bag large enough to hold about one seer and a half of water, say a foot and a half long, by four or five inches broad. Make a hole at the lower end of the bag large enough to admit one end of the bamboo, and have the former securely tied round the bamboo, so that water will not run out between the bamboo and the leather, but through the pipe. When about giving an injection, have the bamboo well smeared with oil, then introduce it into the rectum, and with one hand retain it there ; with the other hand lift up the open mouth of the bag, above the level of the animal's back, and tell an assistant to pour the injection in the mouth of the bag, and it will gradually run into the bowels.

---

## 62.

*Laxative clysters.*

Take two seers of hot water, and mix sufficiently soap with it, to form soap-suds, add two or three ounces (1 to 1½) chittacks of mustard oil thoroughly stir and mix ; then inject per rectum with the pipe described.

| | | | | |
|---|---|---|---|---|
| Warm linseed gruel | ... | ... | 4 or 6 quarts = | 2 or 3 seers. |
| Common salt (lobon) | ... | ... | 1 to 2 ounces = | ½ to 1 chittack. |
| Turpentine (turpin tael) | ... | ... | 1 ounce = | ½ chittack. |

Thoroughly stir and mix, then inject per rectum.

---

## 63.

*Astringent clyster.*

| | | | | |
|---|---|---|---|---|
| Thick rice gruel | ... | ... | 2 quarts = | 1 seer. |
| Opium (aphim) | ... | ... | 2 drachms = | ¼ tolah. |

To be well mixed and given per rectum.

## 64.

*Vermifuge clyster.*

| | | | | |
|---|---|---|---|---|
| Common oil | ... | ... | ... | 1 quart = ½ seer. |
| Turpentine | ... | ... | ... | 1 ounce = ½ chittack. |

To be warmed and thoroughly mixed and injected per rectum.

---

HOW TO INSERT SETON.

## 65.

Make a cut three-fourths of an inch in length, through the skin with a sharp knife, and another cut through the skin of the same size two or three inches distant; pass some plaited horse hair, or string, with a large needle through the one cut, along under the skin, to and through the other cut; then tie the two ends of the plait in a firm knot, but so that the loop may not press upon the skin between the two incisions.

Dress the seton and neighbouring skin three or four times a day, with the dressing No. 49, to prevent the flies blowing the part and to increase the action of the seton.

Passing a seton in the dewlap, is simply done by pushing a sharp needle, threaded with the plaited string through the dewlap.

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## 66.

DRENCHING.

*How to give a drench.*

The bullock's head must be held up on a level with the animal's back by an assistant standing on the left side of the patient; the person, about to give the drench, standing on the right side, should then introduce the two forefingers of his left hand into the right corner of the mouth of the bullock, and gently pull out the lip and cheek, so as to make the opening into the mouth funnel shaped; the mouth of the bottle holding the drench should then be carefully introduced by the right hand of the operator into the dilated corner of the mouth, and a little of the drench can then be poured into the mouth, and after every time the animal swallows, some more of the drench may be poured into the mouth, and thus gradually the whole drench may be given.

Care should always be taken, especially in animals suffering from sore-throat, in giving the drench in small quantities at a time, and if the animal coughs, or attempts to cough, the assistant should at once let loose the head so as to allow the animal to depress the head and cough freely, and thereby prevent the chance of any of the drench passing into the windpipe. If the assistant does not let loose the head as soon as there is any sign of the animal wishing to cough, some of the drench may pass into the wind-pipe and cause death.

Drenches are best given in a metal bottle of the shape of a common English wine bottle, or if such a bottle is not at hand, a common glass wine bottle may be used, but care is necessary to prevent the glass being bitten and broken by the teeth.

BABUGARH, N.-W. P.,
*The 4th April*, 1883.

J. H. B. HALLEN,
*Inspecting Veterinary Surgeon,*
*Bombay Army.*